Vanguerieae A.Rich. ex Dum. (Rubiaceae) in Australia, 2. *Cyclophyllum* Hook.f.

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Summary

Reynolds, S.T. & Henderson, R.J.F. (2001). Vanguerieae A.Rich. ex Dum. in Australia, 2. *Cyclophyllum* Hook.f. *Austrobaileya* 6 (1): 41–66. As a result of critical studies of Australian species that have, in the past, been included in *Canthium* Lam., the genus *Cyclophyllum* Hook.f. (Rubiaceae, Vanguerieae) is now accepted as occurring in Australia. A revision of this genus in this continent is presented here. Nine of its species occur in Australia, five of which are described here as new, namely *C. longipetalum* S.T.Reynolds & R.J.F.Hend., *C. maritimum* S.T.Reynolds & R.J.F.Hend., *C. multiflorum* S.T.Reynolds & R.J.F.Hend., *C. protractum* S.T.Reynolds & R.J.F.Hend. and *C. rostellatum* S.T.Reynolds & R.J.F.Hend. The new combinations *C. brevipes* (Merr. & L.M.Perry) S.T.Reynolds & R.J.F.Hend., *C. coprosmoides* (F.Muell.) S.T.Reynolds & R.J.F.Hend., *C. costatum* (C.T.White) S.T.Reynolds & R.J.F.Hend. and *C. schultzii* (O.Schwarz) S.T.Reynolds & R.J.F.Hend. are provided for the remaining four. The new combination *C. coprosmoides* var. *spathulatum* (O.Schwarz) S.T.Reynolds & R.J.F.Hend. is provided for a distinctive variety of *C. coprosmoides*, and *C. schultzii* forma *angustifolium* S.T.Reynolds & R.J.F.Hend. for a distinctive form of *C. schultzii*. All recognised taxa are described, and keys to identify them as well as maps showing their known distribution are provided. Line drawings representing some of the recognised taxa are also provided.

Keywords: Rubiaceae, Vanguerieae, *Cyclophyllum*, Australia

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Introduction

Psydrax Gaertn. and *Cyclophyllum* Hook.f. have of recent times been combined under *Canthium* Lam., but based mainly on the work of Bridson (1985, 1987, 1992) and studies of much Australian material, these genera plus *Everistia*, the only other genus with taxa previously included in *Canthium* in Australia, are now considered worthy of recognition in Australia. As a result, the genus *Canthium* in the strict sense is found not to occur in this country. A key to distinguish *Cyclophyllum* from *Psydrax* and *Everistia* has been provided by Reynolds and Henderson (1999).

Bridson (1987) accepted that there existed a group of species allied to *Pyrostria* Commerson ex Juss. from Africa, and centred on the New Caledonian *Cyclophyllum deplanchei* Hook.f., which could be recognised as either a distinct genus with the name *Cyclophyllum* Hook.f., an infra-generic group within *Pyrostria* or even as an infra-generic group within *Canthium*. At that time, she left the question of what rank to recognise this group at as a matter still "to be settled". She diagnosed the group and listed *Canthium barbatum* (G.Forst.) Seem. and *C. sessilifolium* A.Gray, from Fiji, *C. brevipes* Merr. & L.M.Perry, *C. caudatum* (Valeton) S.Moore, *C. longiflorum* (Valeton) Merr. & L.M.Perry and *C. valetonianum* S.Moore from New Guinea, and *C. coprosmoides* F.Muell. and *C. costatum* C.T.White from Australia as species she believed "should be considered for transfer to *Cyclophyllum*".

Smith & Darwin (1988, p.232), in dealing with the group in Fiji, recognised *Cyclophyllum* as a distinct genus and included three species from that country in it. Guilluamin had earlier (Guilluamin, 1948) recognised 14 species from New Caledonia as belonging to this genus. As stated above, our studies have led us to accept that *Cyclophyllum* should be recognised as a distinct genus.

Although the species treated here as *Cyclophyllum costatum* (from north Queensland) and *C. schultzii* (from the Northern Territory) are very distinctive, herbarium material that was previously included under *Canthium*

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coprosmoides (from Queensland) was found to be very variable and, in fact, represented a number of undescribed taxa in addition to *Cyclophyllum coprosmoides* in the strict sense. These new taxa have been formally described in this account.

As stated previously (Reynolds & Henderson, l.c.), this study was based mostly on herbarium material, but measurements given for leaves, inflorescences, flowers and fruits are based on dried, fresh or spirit material. In the list of specimens cited, only the herbaria from which specimens have been seen are recorded. State subdivisions (pastoral districts) are provided for Queensland collections only. The taxonomic concepts accepted here are those of the first author and result from her many years of detailed herbarium studies.

Taxonomy

Cyclophyllum Hook.f. in Benth. & Hook. f., Gen. Pl. 2: 535 (April 1873). *Canthium* sect. *Cyclophyllum* (Hook.f.) Baillon, Adansonia 12: 184 (1879); from Greek *cyclo-* (circular) and -*phyllus* (-leaved), in reference to the leaf blades of the type. **Type:** *Cyclophyllum deplanchei* Hook.f.

Trees or shrubs, usually with horizontal branches; branchlets without spines. **Leaves** stipulate, petiolate, usually coriaceous; stipules interpetiolar, ovate to deltoid, acuminate or with a subulate tip. **Inflorescences** axillary, of 1 to few-flowered, umbelliform, sessile or shortly pedunculate cymes, or sometimes with flowers along rudimentary inflorescence branchlets. **Flowers** in bud obtuse or acuminate at apex, 5-merous (sometimes 4-merous in *C. costatum*), pedicellate, each subtended by a single bract; calyx tube cupuliform except in *C. costatum* where long attenuated into pedicel; corolla tube slender, longer than lobes, hypocrateriform, coriaceous, hairy adaxially with dense, white, moniliform hairs projecting from its mouth and obscuring anthers; stamens (4 or) 5, with filaments very short, and anthers ovoid, dorsifixed, introrse, the locules attached by their dorsal surface to a brown coloured connective with pallid margins; ovary 2-locular; ovules solitary in each locule, pendulous; style as long as the corolla tube; stigma attached to the style at its rounded base, fleshy, capitate, usually obscurely 2-lobed. **Fruit** transversely ellipsoid, broadly obovoid to obcordiform, smooth, entire (or ribbed in *C. costatum*); pyrenes exceedingly woody, usually broadly hemispherical and depressed distally, smooth or slightly granular or rugose when dry.

Distribution: About 30 species, occurring in New Caledonia, Fiji, the Moluccas, New Guinea and Australia; nine species in Australia.

Notes: The genus *Cyclophyllum* is characterised by its axillary, fasciculate inflorescences, and by its fleshy flowers with a long hypocrateriform corolla tube with moniliform hairs protruding from the throat, introrse shortly stalked anthers with a dorsal brown-coloured connective, style which shortly exceeds the corolla tube, and capitate stigma which is attached to the style at its convex base.

In the Australian species, the flowers are clustered on very reduced, thickened, broad, knob-like peduncles, each flower being subtended by a bract, or the flowers and bracts are clustered distally on a short, more or less slender peduncle.

Affinities: *Cyclophyllum* Hook.f. is closely related to *Pyrostria* Commerson ex Juss. from Africa, and Bridson (1987) included it as one of five informal groups she recognised within that genus. However, Guilluamin (1948) and Smith & Darwin (1988) recognised it as a distinct genus. *Cyclophyllum* is also related to *Everistia* and *Psydrax* and resembles those genera in the placement of its cotyledons, but differs from them by its long fleshy hypocrateriform corolla tube which is always longer than the corolla lobes, anthers with a distal appendage, and its capitate stigma. It resembles *Canthium*, with which it was previously combined, in its habit, inflorescence attributes, anthers with a dark dorsal membranous connective, and in style and stigma attributes, but the latter genus has cotyledons placed perpendicular to the ventral face of the seed and a consistently shorter corolla tube.

Key to species of *Cyclophyllum* in Australia

1. Calyx tube elongate, attenuate at base into a slightly winged pedicel, together with pedicel 11–19 mm long; fruits strongly ridged; leaves thin, slightly membranous when dry .... **1. C. costatum**
   Calyx tube short, cupular, attached to a slender, rounded pedicel, together with pedicel less than 10 mm long; fruits evenly rounded or slightly ridged; leaf blades ± coriaceous when dry 2

2. Domatia present on leaf blades, usually conspicuous 3
   Domatia absent on leaf blades or if present, small and inconspicuous 5

3. Cymes (2–)5–12-flowered, sessile; branchlets densely covered with exceedingly conspicuous lenticels; leaf blades (6.7–)9–13 cm long .... **7. C. multiflorum**
   Cymes (1or)2–5-flowered, shortly stalked or sessile; branchlets with few, usually inconspicuous lenticels or lenticels absent; leaf blades usually 5.5–9.5 cm long 4

4. Corolla 8.5–9 mm long; cymes 2–5-flowered, sessile; leaf blades 5.6–7.7 (–8.3) × 2.7–3.2(–4) cm, usually abruptly acuminate at apex; petioles 3–8 mm long .... **5. C. protractum**
   Corolla 13–14 mm long; cymes (1 or)2–4-flowered, on short peduncles or sessile; leaf blades 5.5–7(–9.5) × (2.2–)3.3–5.2 cm, acuminate or subacute at apex; petioles 5–16 mm long .... **4. C. longipetalum**

5. Inflorescences distinctly pedunculate; peduncles (1 or) 2–6 mm long 6
   Inflorescences sessile or with reduced peduncles; peduncles (where present) 0.5–1.5 mm long 7

6. Peduncle branched or simple; cymes (2–)7–11(–16)-flowered; leaf blades 8.5–16.2 × 1.8–7.2(–8.2) cm; fruits 8–12 × 16–23 mm, usually obcordiform, broadly 2-lobed distally; corolla 6–9 mm long .... **8. C. schultzii**
   Peduncle simple; cymes 2–7-flowered; leaf blades 3.8–8.2 × 2.1–4.6(–5.2) cm; fruits 8.5–11.5 × c.8.5 mm, transversely ellipsoid, usually depressed distally; corolla 9–10 mm long .... **6. C. maritimum**

7. Cymes (4–)7–10-flowered; bracts glabrous; leaf blades usually acuminate or subcaudate at apex, 6.2–14.7 × 2.5–5.5 cm, drying blackish coloured or dark brown on both surfaces .... **9. C. brevipes**
   Cymes (1 or)2–4-flowered; bracts pubescent; leaf blades rounded, obtuse, retuse, subacute or subacuminate at apex, 3.6–11(–13.5) × 1.6–5.2(–6.7) cm, drying dark or greyish brown adaxially, pale grey or yellow green abaxially 8

8. Petioles 8–10 mm long; cymes (1–)3–6-flowered; corolla 10–12 mm long, cream to orange or brownish coloured; apex of flower buds and corolla lobes acuminate or rarely obtuse; bracts usually with rusty brown hairs .... **3. C. rostellatum**
   Petioles 4–7 mm long; cymes (1 or)2–4-flowered; corolla 6.5–8(–11) mm long, cream or deep yellow coloured; apex of flower buds and corolla lobes obtuse; bracts with white or pale brown coloured hairs or glabrous .... **2. C. coprosmoides**

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Conspectus of some diagnostic attributes in *Cyclophyllum*

Leaf blades membranous when dry; fruits usually strongly ribbed	*C. costatum*
Leaf blades with prominent domatia	*C. longipetalum, C.multiflorum, C. protractum*
Leaf blades usually with small, obscure domatia	*C. brevipes, C. coprosmoides, C. maritimum, C. schultzii*
Inflorescences usually 5– or more-flowered	*C. maritimum, C. multiflorum, C. schultzii, C. brevipes*
Inflorescences usually 4– or less-flowered	*C. coprosmoides, C. costatum, C. longipetalum, C. protractum*

1. Cyclophyllum costatum (C.T.White) S.T.Reynolds & R.J.F.Hend., **comb. nov.**; *Canthium costatum* C.T.White, Contr. Arn. Arb. 4: 99 (1933). **Type:** Queensland. Cook District: Daintree River, 11 March 1932, *L.J. Brass* 2261 (holo: ?A n.v.; iso: BRI).

Trees 4–8 m high; bark brown or whitish coloured, slightly fissured; branchlets slightly angular distally, reddish brown coloured but usually with a white bloom, the older ones with small, whitish coloured lenticels. **Leaves** with stipules deltoid, keeled, attenuated into a narrow subulate apex 6–7 mm long; petioles (1–) 6–7 mm long; blades elliptic to ovate-elliptic, (4.2–)7–7.7 × (1.9–)3.3–4.2 cm, with apex acute or abruptly obtuse and subacuminate, and base abruptly obtuse or subacute and attenuate into petiole, glabrous, thick and fleshy but membranous when dry, pale green in colour, glossy adaxially and matt abaxially; midrib slender, slightly sunken adaxially but prominently raised abaxially; lateral nerves in 4–7 pairs, extremely slender, arcuate and looping at margins; reticulate venation obscure; domatia absent. **Cymes** 1–3-flowered, with flowers fasciculate on a short, thick, knob-like peduncle. **Flowers** in bud acute at apex, 4 or 5-merous, strongly perfumed; pedicels 10–17 mm long, slender; calyx elongate with a long, flattened, narrowly turbinate, longitudinally ribbed tube attenuating into the pedicel, together with pedicel 11–19 mm long, with a short, 4– or 5-denticulate limb; lobes subequal, narrowly ovate to ovate, 1–1.5 mm long, unicostate; corolla pale yellow, 13–15 mm long, with tube 10–11 mm long, sparsely hairy at mouth; lobes ovate, cuculate at apex, abruptly long-acuminate or cuspidate with a long acumen, tricostate, 3–3.5 × 1.5–1.75 mm, scurfy adaxially, densely papillose abaxially on and near margins with usually 2 rows of papillae; disc shorter than calyx limb, glabrous; stamens with anthers ellipsoid or ± oblongoid, apiculate, c.1mm long. **Fruits** on pendulous pedicels 6–11mm long, reddish coloured when ripe, laterally compressed and 2-lobed, broadly obovate to ± obcordate in broad side view, 1.3–1.4 × c.1.4 cm, strongly angled with 8 or 9 prominent longitudinal ridges, or fruits ellipsoidal and c.10 mm × 6 mm; pyrenes slightly rugose. (Fig. 1, F–I).

Other specimens examined: **Queensland.** Cook District: Daintree River, Dec 1929, *Kajewski* 1450 (BRI); ditto, Aug 1985, *Williams* 85120 (BRI); Mossman, Aug 1957, *Volck* 1388 (BRI); Little Falls Creek, Aug 1957, *Smith* 10050A (BRI); on road up to Mt Windsor Tableland, 16°17'S, 145°05'E, Jul 1978, *Webb & Tracey* 11409 (BRI); Chowchilla Logging Area, State Forest Reserve 144, Mt Windsor, 16°17'S, 145°05'E, Jul 1978, *Unwin* 608 (QRS); State Forest Reserve 144, Oct 1975, *Irvine* 1632 (BRI).

Distribution and habitat: North Queensland; in rainforest at altitudes of 960–1095 m (Map 1).

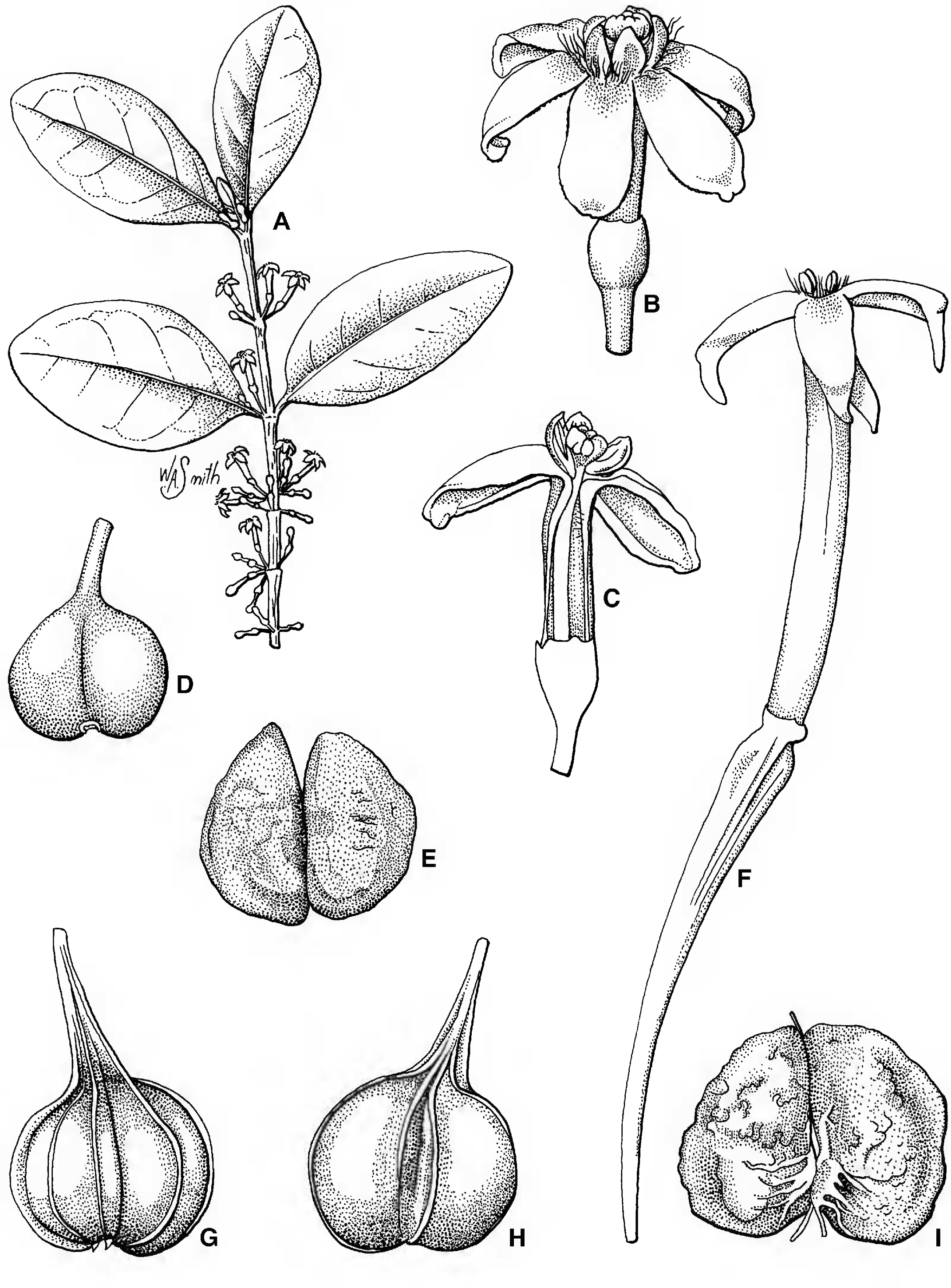
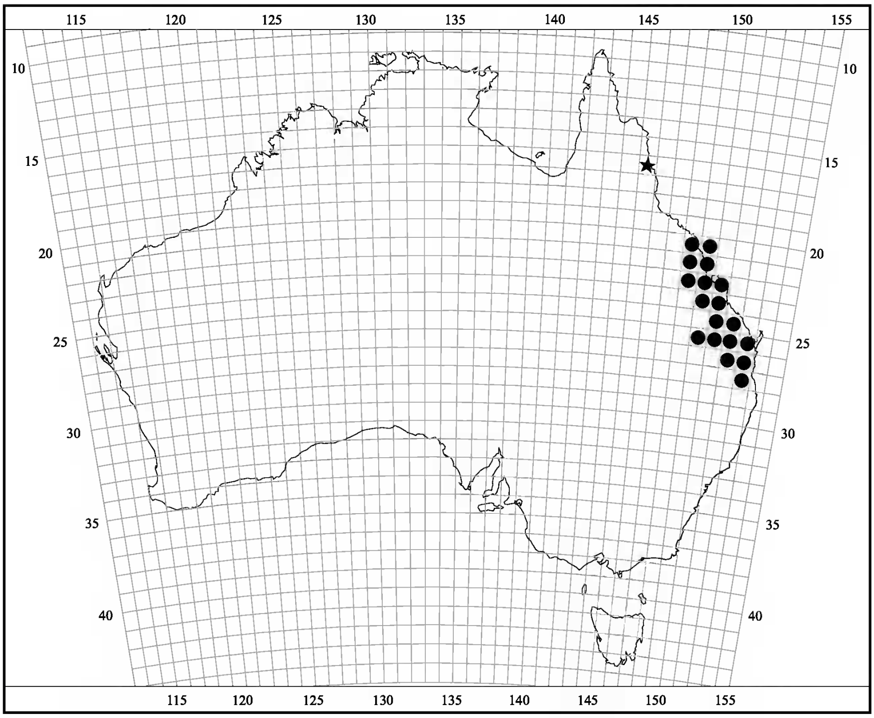


Fig. 1. ***Cyclophyllum coprosmoides*** var. ***coprosmoides***. A. flowering branch × 0.6. B. flower × 5. C. LS of flower × 5. D. fruit × 2. E. pyrenes × 3. A, *Jessup* s.n. (from Lebler 1978, p.529); B & C, *Anderson* 4100 (BRI); D & E, *White* 7287 (BRI). ***Cyclophyllum costatum***. F. flower × 5. G. & H. fruits × 2. I. pyrenes × 3. F, *Kajewski* 1450 (BRI); G–I, *Webb & Tracey* 11409 (BRI).



Map 1. Distribution of *Cyclophyllum costatum* ★ and *Cyclophyllum coprosmoides* var. *coprosmoides* ●.

Notes: *Cyclophyllum costatum* is readily distinguishable by its long-attenuate somewhat laterally compressed calyx tube, complanate winged pedicels, usually strongly ribbed fruits, and leaves ± membranous when dry.

Conservation status: This species, as *Canthium costatum*, is listed as vulnerable under the Regulations of Queensland Nature Conservation Act (as amended 2000) and the Environment Protection and Biodiversity Conservation Act 1999.

2. Cyclophyllum coprosmoides (F.Muell.) S.T.Reynolds & R.J.F.Hend., **comb. nov.**; *Canthium coprosmoides* F.Muell., Philos. Inst. Vic. Trans. 3: 47 (1858). **Type:** Dawson River, date unknown, *Mueller* s.n. (syn: MEL [MEL1538527]); ditto, December 1856, *Mueller* s.n. (syn: MEL [MEL1538570, p.p.]); Mackenzie River, date unknown, *Mueller* s.n. (syn: MEL [MEL1538570, p.p.]); Brisbane River, August 1855, *Mueller* s.n. (syn: MEL [MEL1538569]).

[*Plectronia barbata* sensu F.Muell., Fragm. 9: 186 (1875), non (G.Forst.) F.Muell.]

Shrubs or trees 0.9–10.5 m high, with usually opposite branching; bark grey mottled with pale grey or white; branchlets usually slightly 4-angular distally, pale greyish coloured or very pale brown or brownish-grey, usually slightly scurfy distally and with minute spreading white hairs, usually with conspicuous minute red resin granules and small, round, ± pustular whitish coloured lenticels. **Leaves** with stipules ovate or triangular, keeled and tapered into a short or long, folded apex, glabrous or sparsely white hairy towards base adaxially; petioles 3–7mm long, narrowly winged or ridged distally; blades elliptic, elliptic-oblong, obovate or spathulate, 2.5–8(–12.5) × 1.6–4.6(–6.7) cm, with apex obtuse, ± rounded, slightly retuse or truncate, subacute or rarely abruptly shortly acuminate with obtuse acumen, and base ± cuneate or narrowly cuneate and decurrent into the petiole, thin or thick coriaceous, with both upper and lower surfaces usually with a slight sheen, the upper one dark green or slightly yellowish-green but drying dark brown to blackish and usually dull above, and the lower one pale green

but drying greenish-yellow, grey or pale brown with darker brown or white nerves and occasionally blotched, concave along midrib on adaxial surface; lateral nerves in 3–6 pairs, slender, slightly oblique or arcuate, looping and anatomising near margins; margins flat or slightly recurved; domatia, if present, small. **Cymes** (1or)2–4-flowered, sessile; bracts or hairy or glabrous. **Flowers** in bud obtuse or subacute at apex; pedicels (1.5–)3–5 mm long, minute spreading hairy or glabrous; calyx 2–2.5 × 1.75–1.5 mm, sparsely hairy or glabrous except for ciliolate lobes; limb short, with lobes minute, ovate; corolla white or cream, becoming yellow with age, 6.5–8(–11) mm long, with tube greenish yellow, 3–8 mm long, c.2 mm wide at mouth, sparsely hairy adaxially but densely hairy at throat; lobes ovate-elliptic, ± patent or slightly recurved, abruptly acute and cucullate at apex, 3–5 × 1.5–2 mm, glabrous, usually very scurfy adaxially, streaked with whitish or reddish brown streaks, usually densely papillose towards the apex adaxially on the margins, sparsely papillose abaxially; disc fleshy, as long as or shorter than calyx limb; stamens with filaments c.0.5 mm long and anthers ellipsoid, apiculate at apex, tailed at base, 1.5–1.75 mm long; style with stigma 7–8 mm long; stigma c.1.5 mm × 1.75–2 mm long; ovary walls (especially of mature ovaries) usually covered with numerous reddish resinous cells. **Fruits** on spreading to pendulous pedicels 6–9 mm long, orange or orange-yellow when ripe, ellipsoid to obovoid, slightly obcordiform or transversely ellipsoid, slightly lobed at apex, when dry shallowly grooved between the lobes, 6–10 × 8–12 mm; pyrenes broadly hemispherical, smooth or slightly rugose.

Distribution and habitat: Eastern Queensland, from Fitzroy Island, east of Cairns, to Brisbane River; along creeks and river banks, on ridges along rivers and on rocky headlands.

Notes: *Cyclophyllum coprosmoides*, as based on specimens filed under the name *Canthium coprosmoides* in various herbaria, was found to be a very variable species within which seven distinct taxa were distinguishable. Why this very different material had been included in one taxon in the past was probably because, with the exception of the distinctive *Canthium costatum* (now *Cyclophyllum costatum*) from north Queensland and *C. schultzii* (now *Cyclophyllum schultzii*) from the Northern Territory, *Canthium coprosmoides* was the only name available for specimens of the *Canthium* alliance with clustered umbelliform inflorescences, and flowers with a corolla with a long hypocrateriform tube and short lobes. However, critical examination of the above specimens led to the recognition of five new species, namely *Cyclophyllum longipetalum, C. maritimum, C. multiflorum, C. protractum* and *C. rostellatum*, in addition to *C. coprosmoides* which is now considered to contain two varieties.

Some very early collections of this alliance from northern Queensland were previously identified as of *Canthium barbatum* (or *Plectronia barbata*), a Pacific species. That species, however, differs from the above Australian material by its very acuminate, usually membranous leaves. *Cyclophyllum coprosmoides* is distinguishable by its shortly stalked, elliptic, elliptic-oblong or obovate coriaceous leaf blades with obtuse, rounded or subacute apex, usually hairy young branchlets, sessile 1–3(or 4)-flowered cymes, obtuse or subacute flower buds, corollas 6.5–8(–11) mm long, and obtuse or abruptly subacute corolla lobes which are scurfy adaxially.

Affinities: *Cyclophyllum coprosmoides* is most closely related to *C. rostellatum* in its more or less similar leaves, sessile cymes and number of flowers in each cyme, but that species differs from it by its longer petioles (8.0–10 mm long), usually narrower leaf blades, rostrate flower buds and acuminate corolla lobes. However, specimens which appear to be intermediate between these species are occasionally found (see under *C. rostellatum*).

Variability: The leaves of this species are very variable but the material can be divided into two subordinate taxa which are accepted here as varieties following O. Schwarz (1927).

Key to varieties of *Cyclophyllum coprosmoides*

1. Leaf blades elliptic, elliptic-oblong or subobovate, 5–9.3 × 2.7–5.2 cm, rarely less, with apex obtuse, subacute or shortly obtusely acuminate, and base obtuse or subacute; lateral nerves in 3–6 pairs; petioles 4–7 mm long .... **2a. *C. coprosmoides*** var. ***coprosmoides***

   Leaf blades obovate to spathulate, 2.5–4.8 × 1.6–2.3 cm, rarely more, with apex obtuse or rounded, and base cuneate and decurrent into petiole; lateral nerves in 3 or 4 pairs; petioles 3–4 mm long .... **2b. *C. coprosmoides*** var. ***spathulatum***

2a. C. coprosmoides var. **coprosmoides** Leaf blades elliptic, elliptic-oblong or subobovate, dull green or slightly yellowish green, drying yellowish green to pale greyish coloured on the abaxial surface. (Fig. 1A).

Representative specimens: **Queensland**. North Kennedy District: Proserpine River, 7 km ESE of Proserpine, Nov 1985, *Sharpe* 4202 (BRI). South Kennedy District: Cape Hillsborough National Park, Hidden Valley road, 1.5 km S of picnic area, Jan 1990, *Thompson* 163 (BRI). Leichhardt District: Dawson Range, Blackdown Tableland, 23°44'S,149°07'E, Jun 1977, *Telford* 5778 (CANB); Isla Gorge, about 28 km SW of Theodore, Aug 1973, *Sharpe* 620 & *Hockings* (BRI). Port Curtis District: Deepwater National Park, 40 km E of Miriamvale, Jul 1989, *Gibson* 1609 (BRI); Raspberry Vale, Apr 1945, *Blake* 15547 & *Webb* (BRI); Callide, Oct 1947, *Smith* 3585 (BRI); Greenfields, about 14 km NE of Goovigen, Mar 1986, *Anderson* 4115 (BRI). Wide Bay District: Black Gin Creek, Timber Reserve 580, 25°29'S,151° 55'E, Apr 1990, *Forster* PIF6594 (BRI); Mt Walsh, 6.5 km S of Biggenden, 25°34'S,152°02'E, May 1977, *Telford* 5335 (CANB). Moreton District: Base of Mt Coolum, Apr 1945, *Clemens* s.n. (BRI); Brisbane, Gold Creek road, Brookfield, Jan 1984, *Williams* 84011 (BRI).

Distribution and habitat: Eastern Queensland, from near Proserpine to Brisbane; on sandstone ranges, ridges, stony hillsides and gullies; in remnant scrubs on sandy stony soil, at altitudes up to 450 m. (Map 1).

Variability: Leaf blades in this variety are very variable in shape; specimens from the vicinity of Brisbane usually have small, elliptic leaf blades which are obtuse, rounded or subacuminate at apex, and which dry olive-green on the abaxial surface, whereas specimens from ridges further north, near the Dawson and Mackenzie Rivers as well as from near Proserpine and Cape Hillsborough, usually have larger, broadly elliptic or elliptic-oblong to subobovate leaf blades which usually dry a very pale grey on the abaxial surface. These latter specimens also have flowers that are slightly larger than those on specimens from south-eastern Queensland.

Note: Specimens with more or less obovate leaf blades can be confused with those of *C. coprosmoides* var. *spathulatum*, but the latter variety differs from the former in its smaller leaf blades or by having a fewer number of nerves in those blades.

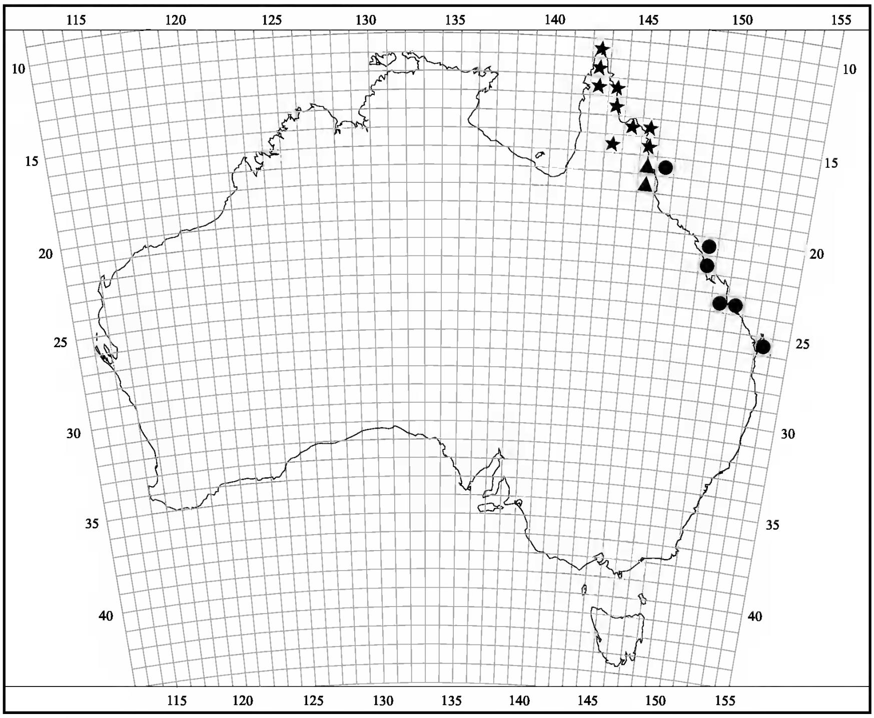
2b. C. coprosmoides var. **spathulatum** (O.Schwarz) S.T.Reynolds & R.J.F.Hend., **comb. nov.**; *Plectronia coprosmoides* var. *spathulata* O.Schwarz, Feddes Repert. 24: 102 (1927). **Type**: East Coast, *Brown* s.n. (lecto [here designated]: BRI; isolecto: CANB, MEL, NSW).

Leaf blades obovate or spathulate, rounded, obtuse or occasionally retuse at the apex and cuneate at the base, of varying shades of green to grey but paler on the abaxial surface than on the adaxial surface.

Specimens examined: **Queensland.** Cook District: Fitzroy Island, 16°55S, 146°03E, Jan 1997, *Jago* 4233 (BRI). North Kennedy District: Harold Island, 20°14'S,149°09'E, Nov 1983, *Batianoff* 3404 & *Dillewaard* (BRI). South Kennedy District: Port Mackay, date unknown, *Dietrich* 1042 (MEL); Bailey Islet, May 1969, *Firth* s.n. (BRI). Port Curtis District: Gladstone, Dec 1864, *Dietrich* 1229 (MEL); ditto, near Keppel Bay, Jan 1865, *Dietrich* 2388 (MEL); Sloping Island, S of N Keppel Island, Oct 1987, *Batianoff* 9197 & *Dillewaard* (BRI). Wide Bay District: Fraser Island, May 1967, *Baxter* 797 (BRI); ditto, Sep 1979, *Coutts* 3 (BRI).

Distribution and habitat: Eastern coastal Queensland, commonly on offshore islands; usually along beaches, on rocky headlands and on frontal dunes. (Map 2).

Notes: Leaf blades in specimens from offshore islands, especially in those collected from plants growing in deep sand on high dunes (e.g. *Batianoff* 9197 & *Dillewaard*) are comparatively very small, and are clustered on usually stunted branchlets with the nodes very close together. Leaf blades in those from plants



Map 2. Distribution of *Cyclophyllum rostellatum* ★, *Cyclophyllum protractum* ▲ and *Cyclophyllum coprosmoides* var. *spathulatum* ●.

growing on the mainland, e.g. from near Gladstone, are usually larger and resemble those in some specimens of the typical variety. However, that variety has leaf blades with a greater number of lateral nerves than are present in the leaf blades of this variety.

Typification: O. Schwarz (1927) cited six collections when describing *Plectronia coprosmoides* var. *spathulata*, namely [1] East Co[a]st, *R.Br[own]*, [2] Gladstone, *Dietrich* no.1229, [3] [locality unknown], *Banks et Solander* s.n., [4] Rockingham Bay, [collector unknown], [5] Queensland [without precise locality], *F. Mueller* [s.n.] and [6] Richmond River, [collector unknown]. These syntypes were all apparently housed in herbarium B in Berlin and are probably now no longer in existence. As to isosyntype material, only *Brown* s.n. (BRI, CANB, MEL, NSW) and *Dietrich* 1229 (MEL [MEL1538514]) has been available for study here. The former collection agrees with the protologue and matches specimens included in this variety here, whereas *Dietrich* 1229 has larger leaf blades which approach in size those on specimens included in *Cyclophyllum coprosmoides* var. *coprosmoides* here. Therefore, based on the material that was available for this study, Brown's duplicate specimen at BRI, stated only to have been collected on the "East Coast" of Australia, is chosen here as lectotype of Schwarz's varietal name. Brown's "East Coast" locality is almost certainly in coastal eastern Queensland.

The locality of collection of the Banks and Solander specimen cited by Schwarz was probably the Endeavour River in north Queensland. Banks and Solander specimens in BRI and CANB of the related *C. rostellatum* are definitely stated to have been collected from the Endeavour River and are possibly/probably conspecific with the specimen seen by Schwarz.

3. Cyclophyllum rostellatum S.T.Reynolds & R.J.F.Hend. **sp. nov.**; *C. coprosmoidi* (F.Muell.) S.T.Reynolds & R.J.F.Hend. similis sed foliis petiolis longioribus, floribus in statu alabastro subrostratis ad apicem, corollae lobis plerumque acuminatis vel caudatis et fructibus

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obcordiformibus differt. **Typus**: Queensland. Cook District: 9 km N of Batavia Downs on the Peninsula Development Road, 12°35'S,142°10'E, altitude 100 m, 22 April 1990, *J.R. Clarkson* 8505 & *V.J. Neldner* (holo: BRI). *Canthium* sp. (Mt Rose A.R.Bean 1978), S.T. Reynolds (1997, p.180).

Small trees 2–6 m high; trunks 12–15 cm in diameter; bark grey mottled with white, tessellated; branchlets quadrangular distally, whitish or yellowish-white coloured, densely lenticellate, glabrous. **Leaves** with stipules triangular, keeled and attenuated into a long folded apex, thin and often paleaceous and ± fimbriate at margins, and with long rust-coloured hairs on the margins and at base adaxially; petioles 8–10 mm long; blades elliptic-oblong to subobovate, (3.7–)6.5–11(–13.5) × (1.6–)2.7–3.4(–5.5) cm, with apex obtuse or ± rounded, and base cuneate and attenuate into the petiole, glabrous, thick coriaceous, the adaxial surfaces drying brown, the abaxial ones drying olive green, greyish-brown, pale grey or whitish coloured (in young leaves) and often with whitish coloured flecks and blotches; midrib slightly channelled adaxially; lateral nerves in 4 or 5 pairs, slender, ± arcuate and looping near margins; reticulate venation obscure or absent; domatia very rarely present when inconspicuous. **Cymes** (1–)3–6-flowered, with flowers fasciculate on a short, thick, knob-like peduncle; bracts rust-coloured hairy. **Flowers** in bud acuminate and somewhat rostrate at apex, rarely obtuse or subacute, strongly perfumed; pedicels 2–3.5 mm long; calyx glabrous, c.2 × 1.5 mm, with short, denticulate limb with ciliolate lobes; corolla creamy yellow to orange or brown, 10–12 mm long (only 5 mm long in one specimen), with tube (2–) 4.5–7 mm long, 1–1.5 mm wide at mouth, sparsely hairy adaxially but densely hairy at mouth; lobes elliptic, abruptly long acuminate at apex with acumen usually about half the length of the lamina of corolla lobe, or subacute at apex, 2.5–4.5 × 1–2 mm, glabrous, scurfy adaxially, densely papillose along margins and at attenuated slightly folded apex; stamens with filaments c.0.5 mm long and anthers c.1.5 mm × 1 mm; style with stigma 7.5–8.5 mm long; stigma c.0.75 × 0.75 mm. **Fruits** on erect, spreading to pendulous pedicels (3–)6–8 mm long, orange-yellow, orange-brown or reddish coloured when ripe, obcordiform, slightly lobed at apex, prominently longitudinally 2-lobed, when dry with deep and narrow grooves between the lobes and with short ribs towards the base, 6–11 × 5–11 mm, or rarely 1-lobed; pyrenes depressed ovoid. (Fig. 2).

Selected specimens: **Queensland.** Cook District: Edith Falls, Jardine River, 11°09'S,142°30'E, Oct 1989, *O'Reilly* 541 (BRI); Brown's Creek, Pascoe River, Jul 1948, *Brass* 19583 (BRI); north bank of Pascoe River near Youngman's Crossing, 12°33'S,143°14'E, Nov 1977, *Tracey* 14597 (BRI); Mt Tozer, Iron Range, 12°45'S,143°13'E, Oct 1968, *Webb & Tracey* 8719 (BRI); Tozer [Iron] Range, 0.5 mile [0.8 km] E of Mt Tozer, Jul 1948, *Brass* 19401 (BRI, CANB); McIlwraith Range, Leo Creek Road, Timber Reserve 14, 13°43'S,143°20'E, Sep 1975, *Hyland* 3330 (BRI, CANB, NSW, QRS); ditto, Sep 1975, *Sanderson* 748 (QRS); McIlwraith Range, Lankelly Creek, Timber Reserve 9, Jun 1992, *Forster* PIF10382 & *Tucker* (BRI); Mt Rose area, NW of Cooktown, 15°20'S,145°02'E, Jul 1990, *Bean* 1978 (BRI); Ayton Road, Jun 1962, *Gittins* 566 (BRI, NSW).

Distribution and habitat: Far northern Queensland from Torres Strait islands to near Cooktown; on ranges, rocky slopes, gorges and gullies, usually near permanent streams; in rainforests, mostly on soils derived from granite at altitudes of 250-600 m (Map 2).

Notes: The inclusion of Torres Strait Islands in the distributional range of *C. rostellatum* is tentative because only scanty, sterile material presumably of this species from this locality has been seen.

The colour of its fresh leaves is recorded as bluish green by L.S. Smith (*Smith* 11834, BRI).

C. rostellatum is characterised by its subrostrate flower buds, acuminate or subacute corolla lobes, whitish coloured glabrous branchlets, usually narrow elliptic leaf blades on long petioles and its rusty hairy stipules and bracts. It is closely related to *C. coprosmoides* which it resembles at first sight in its leaves and few-flowered cymes but that species differs from *C. rostellatum* by its obtuse flower buds and corolla lobes, usually broader leaves, short petioles and hairy and scurfy young branchlets. These species, however, are connected by intergrades (see below) but the extremes are quite distinct.

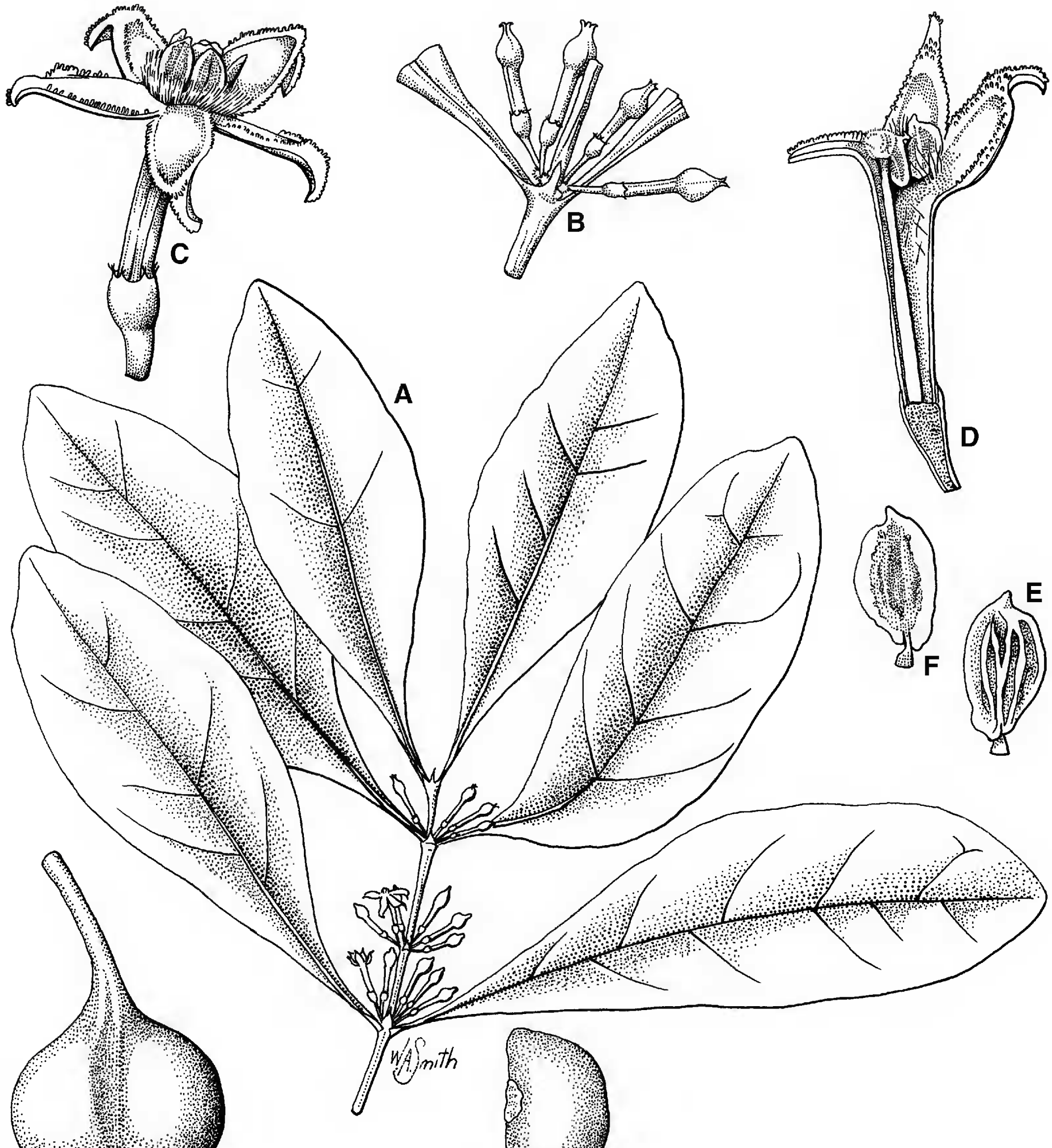


Fig. 2. ***Cyclophyllum rostellatum***. A. flowering branch × 0.8. B. detail of inflorescence × 2. C. flower × 5. D. LS of flower × 5. E. stamen (adaxial view) × 10. F. stamen (abaxial veiw) × 10. G. fruit × 3. H. pyrene × 3. A–H, *Clarkson* 8505 & *Neldner* (BRI). Del. W. Smith.

Variability: The shape and size of leaf blades and the shape of the flower buds in this species are quite variable. Specimens with narrowly elliptic or subobovate leaf blades which dry greyish or greyish-brown on the abaxial surface and have dark coloured nerves and paler coloured blotches, subrostrate flower buds and acuminate corolla lobes are typical of this species. Whereas specimens with very small thick leaves (e.g. *Hyland* 3330 and *Sanderson* 748 from McIlwraith Range, and *Brass* 19401A from Mt Tozer Range above) probably represent a distinct form or variant, they lack flowers. Examination of these, would be necessary to be certain of this. Moreover, specimens with broad leaves with acuminate flower buds (e.g. *Bean* 1978 and *Gittins* 566 above), and others with narrow leaves but with obtuse to subacute flower buds are also included here. These probably represent intergrades between this species and *C. coprosmoides*, but examination/study of more such specimens would be necessary to be certain of this. The broad-leaved form, as represented by *Bean* 1978 and *Gittins* 566 above, resembles the latter species but differs from that in the nature of its flower buds, overall aspect, longer petioles and glabrous branchlets.

Etymology: The specific epithet, from Latin *rostellatus*, beak-like, refers to the beak-like apex of the flower buds.

4. Cyclophyllum longipetalum S.T.Reynolds & R.J.F.Hend. **sp. nov.** differt a *C. coprosmoide* (F.Muell.) S.T.Reynolds & R.J.F.Hend. foliis conspicue foveolatis acuminatis subacutisve et petiolis corollisque longioribus. **Typus**: [New South Wales.] Port Jackson, February 1805, *R. Brown* s.n. (holo: MEL [MEL1538081]; iso: ?BM n.v., BRI [AQ123681] CANB, NSW [NSW193831]).

Canthium sp. (Cooroy S.T.Blake+ 15507), S.T. Reynolds (1997, p.180).

Trees 2.5–20 m high; trunks to 38 cm in diameter; branchlets glabrous, quadrangular distally, very pale brown often mottled with white, dotted with minute resin glands and small whitish coloured lenticels. **Leaves** with stipules triangular, keeled, attenuated into a long folded apex; petioles 5–16 mm long; blades elliptic, (5.5–)7–9.5(rarely –11.5) × (2.2–)3.3–4.3(–5.2, rarely –5.7) cm, usually abruptly narrowing and acuminate at both ends, or with apex abruptly acuminate or subacute, and base acute and decurrent into the petiole, glabrous, thin, coriaceous, with adaxial surface pale green and dull or slightly glossy but drying dull green, pale greenish-yellow or dark brown and usually blotched, and abaxial surface usually paler than adaxial one; lateral nerves in 4 or 5 pairs, slightly arcuate and looping near margins, obscure adaxially; domatia present, prominent, few, on each side of midrib. **Cymes** 1–4-flowered, sessile or subsessile with peduncles 1–2 mm long; bracts hairy. **Flowers** in bud obtuse at apex, strongly scented; pedicels 4–6 mm long, usually stout; calyx 2.5–3 mm long, with tube ± cupular but attenuate into the pedicel and with a short lobed limb; lobes minute, ovate, usually ciliolate; corolla 12–15 mm long, with tube white becoming brown with age, 8–12 mm long and c.2 mm wide, sparsely hairy adaxially and densely hairy at mouth; lobes white becoming greenish orange with age, ovate-elliptic, 3.5–5 × 1.5–2 mm, folded at apex where ± abruptly shortly acuminate or cuspidate, scurfy adaxially, glabrous abaxially and densely papillose on the margins; disc slightly shorter than the calyx limb, fleshy; anthers ovoid-ellipsoid, c.2 mm long, apiculate distally, tailed proximally, on filaments c.0.5 mm long; style with stigma 10–13 mm long; stigma 2–2.5 × 2–2.5 mm. **Fruits** on erect, spreading to pendulous pedicels 7.5–12 mm long, orange to red when ripe, obovoid, depressed or shallowly lobed at apex, deeply grooved between lobes when dry, 1–1.25 × 1.2–1.5 cm; pyrenes depressed ovoid. (Fig. 3).

Selected specimens: **Queensland**. Wide Bay District: Fraser Island, Nov 1915, collector unknown [? *Morrison* s.n.] (BRI); ditto, May 1967, *Baxter* 845 (BRI); Cooroy, Apr 1945, *Blake* 15507 & *Webb* (BRI). Moreton District: Rocky Creek, State Forest 249, SE of Yandina, 26°35'S,152°59'E, Apr 1990, *Bean* 1503 (BRI); Mt Glorious, Jan 1945, *Clemens* s.n. (BRI); ditto, Apr 1956, *Hoogland* 5237 (CANB); ditto, Apr 1999, *Phillips* 199 (BRI); Lyrebird Ridge road, northern end of Springbrook Plateau, 28°11'S,153°15'E, Dec 1993, *Grimshaw* 269 (BRI). **New South Wales.** Lennox Head, Ballina, Apr 1892, *Bauerlen* 799 (MEL, NSW); Lismore, Oct 1891, *Bauerlen* s.n. (MEL); Whian Whain State Forest, Gibberagunyah Mountain, 28°35'S,153°19'E, May 1968, *Jones* 3825 (CANB); Port Macquarie, Feb 1895, *Brown* s.n. (NSW [NSW193746]); Hastings River, date unknown, *Beckler* s.n.(MEL [MEL1538257]; NSW [NSW193747]);

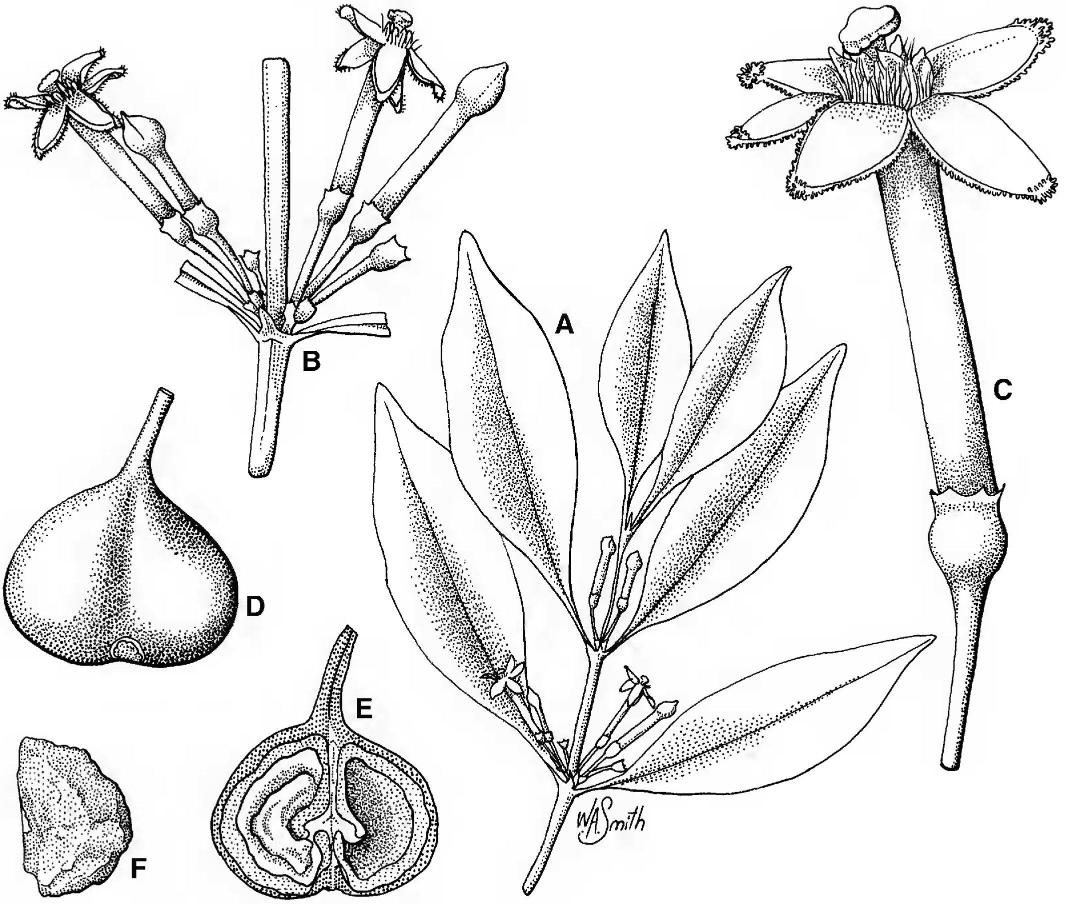


Fig. 3. ***Cyclophyllum longipetalum***. A. flowering branch × 0.6. B. detail of inflorescence × 2. C. flower × 5. D. fruit × 2. E. LS of fruit showing embryo × 2. F. pyrene × 2. A–C, *Brown* s.n. [MEL1538081] (MEL); D–F, *Peberdy* s.n. [AQ468261] (BRI). Del. W. Smith.

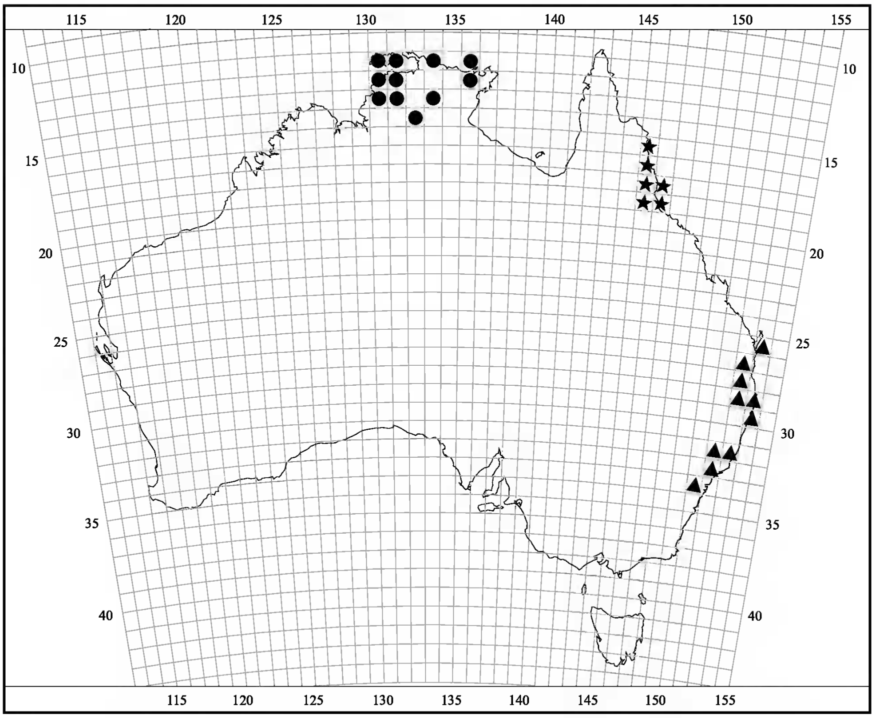
Kurrajong, Blue Mountains, date unknown, *Woolls* s.n. (MEL [MEL1538498]); Kalandra Sanctuary, Mona Vale, 33°44'S,151°17'E, Oct 1977, *Coveny* 9697 (NSW); Foley's Bush, Foxground, 34°43'S,150°46'E, Nov 1906, *Hay* s.n. (NSW).

Distribution and habitat: South-eastern Queensland to Illawarra District, New South Wales; usually on steep ranges, ridges and hillsides, in shallow stony soil; in rainforests at altitudes of 135–600 m (Map 3).

Notes: *C. longipetalum* is characterised by its few-flowered cymes, flowers with long corolla tubes and foveolate, usually subacuminate leaves with long petioles. It resembles *C. coprosmoides* at first sight in its leaves and inflorescences, but differs from that species as follows:-

C. longipetalum has glabrous branchlets, subacuminate or acute leaves with petioles 5–16 mm long and domatia present and prominent, sessile or subsessile cymes with peduncles 1–2 mm long, and flowers with a corolla 12–15 mm long. *C. coprosmoides* has branchlets usually scurfy and hairy distally, obtuse or slightly round-tipped leaves with petioles 3–7 mm long and domatia, if present, small, sessile cymes and flowers with a corolla 6.5–8(–11) mm long.

Etymology: The specific epithet, from Latin *longus*, long, and *petalum*, petal, refers to the comparatively long corollas in flowers of this species.



Map 3. Distribution of *Cyclophyllum longipetalum* ▲, *Cyclophyllum multiflorum* ★ and *Cyclophyllum schultzii* forma *schultzii* ●.

5. Cyclophyllum protractum S.T.Reynolds & R.J.F.Hend. **sp. nov.**; *C. coprosmoidi* (F.Muell.)S.T.Reynolds & R.J.F.Hend. similis sed foliis foveolatis apice acuminato protractove et inflorescentiis 2-5-floribis differt. **Typus**: Queensland. Cook District: State Forest Reserve 144 Whypalla, Chowchilla Logging Area, 16°18'S,145°05'E, altitude 1000 m, 2 February 1988, *B.P.M. Hyland* 13500 (holo: BRI; iso: ?QRS n.v.).

Canthium sp. (Copper-Lode Falls C.H.Gittins 2211), S.T. Reynolds (1997, p.180).

Trees 8–15 m high; trunks 10–20 cm in diameter; branchlets glabrous, greyish coloured mottled with white and dotted with whitish or dark coloured, ± pustulate lenticels. **Leaves** with stipules broadly ovate, keeled, attenuated into a short lobe distally; petioles 3–8 mm long; blades elliptic-ovate, 5.6–7.7(–8.3) × 2.7–3.2(–4) cm, with apex usually abruptly long acuminate or ± caudate, and base subacute, glabrous, thin, coriaceous, drying dark brown adaxially, pale brown abaxially and sometimes irregularly blotched; lateral nerves in 3–5 pairs, ± arcuate and looping near margins; secondary veins loosely reticulate, usually obscure; domatia present, usually conspicuous. **Cymes** 2–5-flowered, on peduncles 0.5–1.5 mm long; bracts glabrous, smooth or ciliolate. **Flowers** in bud obtuse at apex, strongly perfumed; pedicels 2–3 mm long; calyx 1.5–2 × c.1.75 mm, cupular, glabrous, with a short, lobed limb; lobes minute, ovate, glabrous or rarely sparsely ciliolate; corolla 8.5–9 mm long, cream, yellow or orange with age, with tube 4.5–6 mm long and c.1.5 mm wide at mouth, sparsely hairy adaxially but densely hairy at mouth; lobes elliptic-ovate, 3.5–4.5 × c.1.5 mm, glabrous but densely papillose at the slightly cucullate apex; stamens with filaments c.0.5 mm long and anthers c. 1.5 mm long; style with stigma 6–7.5 mm long; stigma c.1.25 × 1.25 mm. **Fruits** on erect to spreading or decurving pedicels 8–10 mm long, red when ripe, transversely ellipsoid or ± obcordiform, slightly truncate to

lobed at apex, deeply grooved between lobes when dry, 7.5–9 × 9–11 mm; pyrenes smooth.

Selected specimens: **Queensland**. Cook District: State Forest Reserve 144, Agapetes Logging Area, 16°17'S,145°05'E, Dec 1979, *Hyland* 10178 (BRI, QRS); State Forest Reserve 143, Little Mossman Logging Area, 16°32'S,145°23'E, near Mossman, Oct 1978, *Moriaty* 2470 (QRS); State Forest Reserve 607, Shoteel Logging Area, Mickies Pocket, 16°55'S,145°36'E, [NE of Mareeba], Dec 1981, *Gray* 2318 (BRI, QRS); Copper-lode Falls Dam site, c.6 miles [c.9.5 km] S of Cairns, 16°56'S,145°46'E, Sep 1970, *Gittins* 2211 (BRI).

Distribution and habitat: North Queensland, from Daintree River to near Cairns and Mareeba; on ranges in rainforest at altitudes of 400-1000 m (Map 2).

Notes: *C. protractum* is characterised by its usually abruptly acuminate, prominently foveolate leaves, 2–5-flowered shortly pedunculate cymes and transversely ellipsoid or subobcordiform fruits. It resembles *C. maritimum* and *C. coprosmoides* in the shape and size of its leaves and few-flowered cymes, but the former species differs from *C. protractum* by its efoveolate leaves, peduncles (1–)2.5–6 mm long, (2–)4–7-flowered cymes, and transversely ellipsoid fruits which are slightly depressed at the apex and only shallowly lobed when dry. *C. coprosmoides* differs from *C. protractum* by having leaves with domatia, when present, comparatively small, and the abaxial surface of the blade is greenish yellow, greyish or pale brown coloured when dry, and its sessile, 1–4-flowered cymes.

Etymology: The specific epithet, from Latin *protractus*, drawn out, refers to the usually protracted apex of this species' leaf blades.

6. Cyclophyllum maritimum S.T.Reynolds & R.J.F.Hend. **sp. nov.** primo aspectu *C. protracto* S.T.Reynolds & R.J.F.Hend. persimilis, sed foliis efoveolatis apice obtuso et inflorescentiis distincte pedunculatis differt. **Typus**: Queensland. Cook District: Base of Mt Cook, near Cooktown, January 1982, *V.Scarth-Johnson* 1218A (holo: BRI).

Canthium sp. (Lizard Island R.L.Specht+ LI181), S.T. Reynolds (1997, p.180).

Shrubs or small trees 3–10 m high; bark mottled grey, slightly rough; branchlets glabrous, very pale brown or pale grey, with dense, whitish or dark coloured lenticels. **Leaves** with stipules triangular, keeled, attenuated into a short lobe distally; petioles 5–8 mm long, channelled adaxially; blades elliptic, broadly elliptic or elliptic-ovate, (3.8–) 5.5–8.2 × (2.1–)3–4.6(–5.2) cm, with apex obtuse or abruptly shortly acuminate, and base abruptly obtuse or subacute and decurrent into petiole, with margins slightly recurved, thin, coriaceous, the adaxial surface slightly glossy, drying brown, blackish or dark greyish-green and with midrib occasionally sunken proximally, the abaxial surface usually paler brown with nerves darker coloured; lateral nerves slender, in 4–6 pairs, suboblique or arcuate and looping near margins; secondary venation usually obscure; domatia absent or very rarely present but obscure. **Cymes** (2–)4–7-flowered, on peduncles (1–)2.5–6 mm long; bracts glabrous. **Flowers** in bud subacute or obtuse at apex, strongly perfumed; calyx c.2 × 1.5 mm, glabrous, with a short, denticulate limb; corolla 9–10 mm long, yellow, with tube 5–6 mm long and 1.5–2 mm wide at mouth, sparsely hairy adaxially but densely hairy at mouth; lobes sublanceolate, 3.5–5.5 × 1.5–1.75 mm, scurfy adaxially, glabrous abaxially, densely papillose distally on the acute and slightly reflexed apex; stamens with filaments c.0.5 mm long and anthers c.1.5 × 1 mm; style with stigma 7–8 mm long; stigma c.1.25 × 1.25 mm. **Fruits** on erect, spreading or decurving pedicels 6–10 mm long, greenish orange to red when ripe but drying black, transversely ellipsoid, obovoid or obliquely ellipsoid, slightly depressed at apex, with a broad shallow channel between the lobes when dry, 8.5–11.5 × 8.5–14 mm; pyrenes smooth. (Fig. 4).

Selected specimens: **Queensland.** Cook District: Torres Strait, Duan Island, Sep 1971, *Lawrie* s.n. (BRI); ditto, Yorke Island, 9°45'S,143°25'E, Jan 1971, Oct 1971, *Lawrie* s.n. (BRI); ditto, Jun 1995, *Waterhouse* BMW3640 (BRI); Bamaga District, Jacky Jacky Creek, May 1962, *Webb & Tracey* 5997 (BRI); 9.5 km S of Captain Billy Landing, 11°38'S,142°51'E, Mar 1992, *Clarkson* 9257 & *Neldner* (BRI); Shelburne Holdings, track between Round Point and Conical Hill, Nov 1985, *Gunness* AG1929 (BRI); Lizard Island, Jun 1973, *Specht* LI112 (BRI); Finch Bay near Cooktown, Mar 1966, *Smith* 13103 (BRI), ditto, Apr 1973, *Henderson* H1604 (BRI); Cooktown, Jul 1943, *Blake* 15066 (BRI); Endeavour River, in 1882, *Persieh* 761 (BRI,

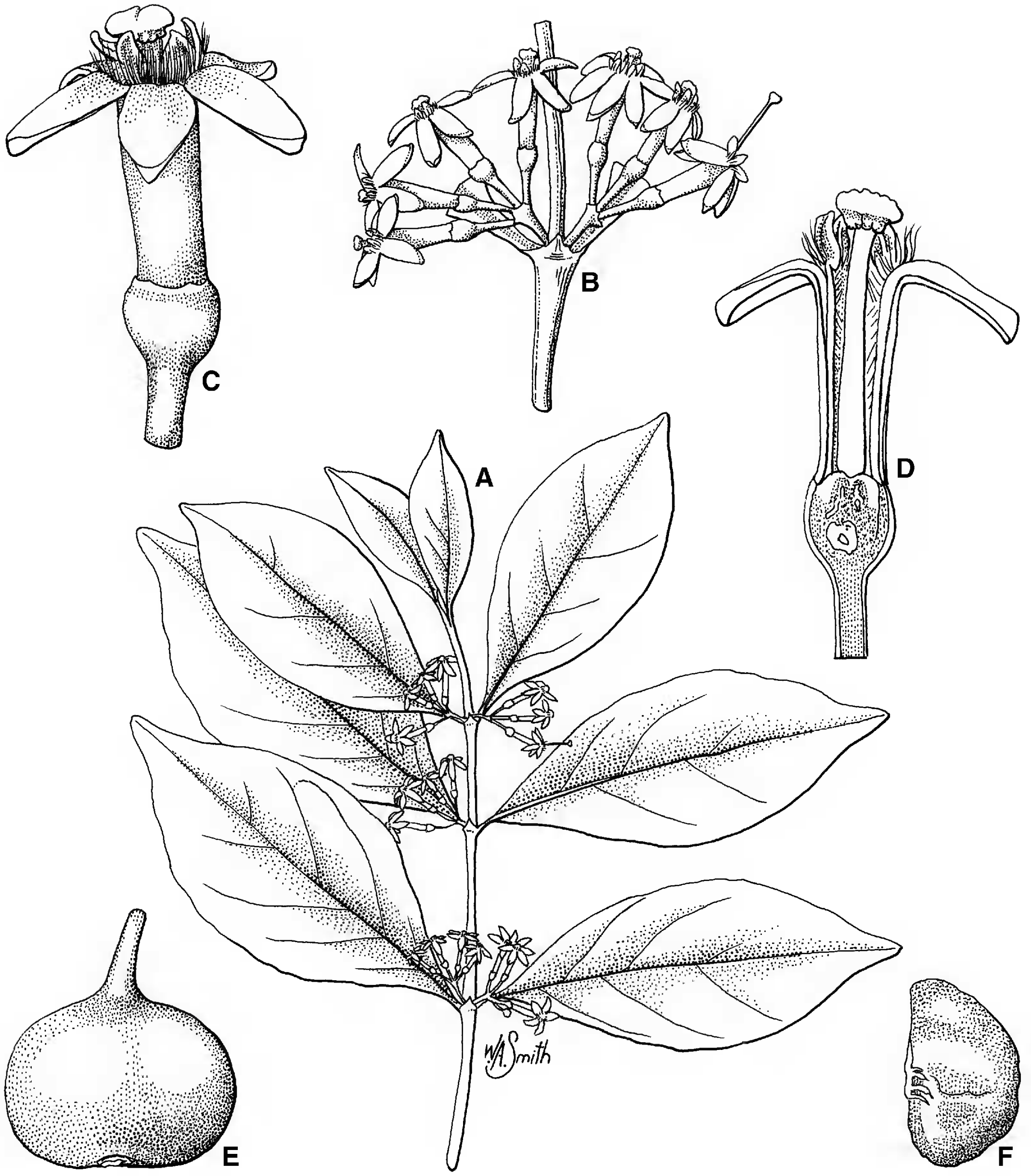
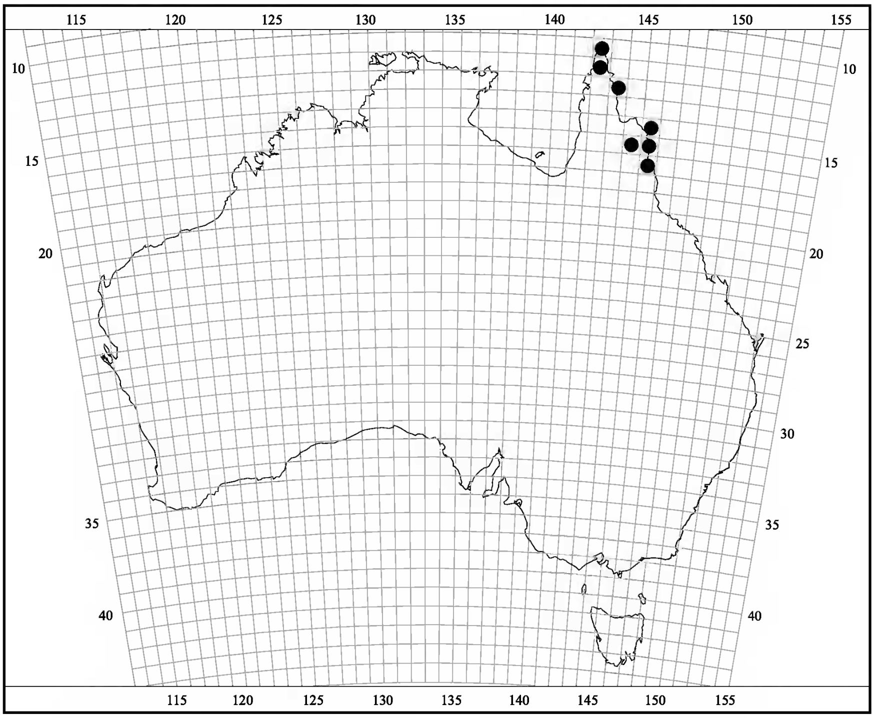


Fig. 4. ***Cyclophyllum maritimum***. A. flowering branch × 0.8. B. detail of inflorescence × 2. C. flowers × 5. D. LS of flower × 5. E. fruit × 2. F. pyrene × 3. A & B, *Gunness* AG1929 (BRI); C & D, *Clarkson* 8636 & *Neldner* (BRI); E & F, *Clarkson* 7699 & *Neldner* (BRI). Del. W. Smith.



Map 4. Distribution of *Cyclophyllum maritimum.*

MEL); Walker Bay, 15°31'S,144°16'E, Dec 1988, *Clarkson* 7699 & *Neldner* (BRI).

Distribution and habitat: North-eastern Queensland, from Torres Strait Islands to the Daintree River, common around Cooktown; in coastal scrubs on headlands, frontal sand dunes, in gullies, along tidal creeks and rivers; in sandy and sandy rocky soil (Map 4).

Affinities: *Cyclophyllum maritimum* is characterised by its thick, slightly glossy, efoveolate leaf blades, its pedunculate, (2–) 4–7-flowered, umbelliform cymes, and its large, broadly ellipsoid fruits which are shallowly channelled between the lobes and depressed at the apex. It resembles *C. protractum* at first sight in its leaves, but that species differs from *C. maritimum* in having leaf blades with prominent domatia and mostly abruptly long-acuminate at the apex, subsessile or sessile cymes, and fruits deeply grooved when dry.

Variability: The leaves of *C. maritimum* are variable. Specimens from around Cooktown which have elliptic leaf blades which are obtuse at both ends are typical of this species but specimens from Lizard Island usually have thicker, narrower, often comparatively smaller leaf blades which are much narrower at their base. These latter specimens possibly represent a distinct form or variant but the material presently available is insufficient to determine if this is correct.

Notes: Collections from near Captain Billy Landing in Cape York Peninsula which have comparatively larger and broader leaf blades are only tentatively included here. Their leaves approach some of those in specimens included under *C. coprosmoides* here but in most other characters they appear to be of this species. More material for examination is needed to be certain of their affinities.

Collector Margaret Lawrie recorded that on Yorke Island in the Torres Strait (*Lawrie* [AQ3960, AQ123642], BRI), this species is known by the native name "Uru", and that the fruits are inedible [for humans].

Etymology: The specific epithet, from Latin *maritimus*, growing by the sea, refers to the usual habitat of this species.

7. Cyclophyllum multiflorum S.T.Reynolds & R.J.F.Hend. **sp. nov.** quoad inflorescentiam *C. schultzii* (O.Schwarz) S.T.Reynolds & R.J.F.Hend. accedens sed inflorescentiis sessilibus, corollis longioribus fructibus obovoideis differt. **Typus**: Queensland. NORTH KENNEDY DISTRICT: Edmund Kennedy National Park near Cardwell, 18°13'S, 146°00'E, 16 December 1991, *A.R. Bean* 3869 (holo: BRI).

Canthium sp. (Kuranda G.Sankowsky+ 680), S.T. Reynolds (1997, p.180).

Small trees 4–10 m high; bark light grey, smooth; branchlets whitish coloured or very pale brown, usually resin-gland dotted and very resinous distally, conspicuously densely lenticellate with usually small white lenticels, puberulous throughout or glabrous distally. **Leaves** with stipules triangular, keeled, cuspidate with a long folded apex (that on stipules distal on branchlets even longer), sparsely hairy adaxially at base; petioles (2.5–) 4–8 mm long, channelled adaxially; blades elliptic, elliptic-oblong or ± oblanceolate, (6.7) 9–12 (–13) × (2.9–)4.3–5.5(–6) cm, usually abruptly obtuse and attenuate at both ends, or with apex acuminate or obtuse and base acute or subacute and attenuate into the petiole, glabrous, thin or thick, coriaceous, drying dark or reddish brown adaxially, olive green, yellow-green or pale greyish coloured (especially in young leaves) and usually speckled and blotched with white abaxially; midrib slightly channelled towards the base adaxially; lateral nerves in 5 or 6 pairs, slightly arcuate or obliquely arched, looping near margins, drying reddish-brown in young leaves; secondary venation very openly reticulate; domatia present, few on each side of the midrib, conspicuous. **Cymes** (2–)6–9(–14)-flowered, sessile or subsessile; bracts hairy. **Flowers** in bud obtuse at apex; pedicels (1–)2.5–6 mm long, puberulous or glabrous; calyx c.2.5 × 2 mm, glabrous; limb short, denticulate; corolla cream coloured or pale yellow, orange or brown with age, (9–)11.5–13.5 mm long, with tube (7–)8–10 mm long, 1–1.5 mm wide at mouth, sparsely hairy adaxially but densely hairy at mouth; lobes ovate, abruptly acute and ± cucullate at apex, (2–) 3–4.5 × 1.5–2 mm, glabrous, scurfy adaxially, papillose on margins and more densely at apex; disc shorter than the calyx limb; stamens with filaments c.0.5 mm long and anthers c.1.5 mm long; style with stigma 10–11 mm long; stigma c.0.75 × 0.75 mm. **Fruits** on erect to spreading, slender pedicels (6–) 8–15 mm long, orange-red when ripe, obovoid or subellipsoid when slightly wider above the middle, laterally compressed, truncate at apex, when dried slightly rhomboidal and deeply grooved, or with shallow broad channels between the two lobes, 8–12 × 6–11 mm; pyrenes smooth or slightly rugose. (Fig. 5).

Representative specimens: **Queensland**. COOK DISTRICT: Daintree River, Dec 1929, *Kajewski* 1465 (MEL); ditto, Oct 1968, *Webb & Tracey* 11371 (BRI); Mowbray River, Jan 1932, *Brass* 1955 (BRI); Noah Creek, 16°08'S,145°27'E, Dec 1986, *Sankowsky* 571 & *Sankowsky* (BRI); State Forest Reserve 1073, Buchan Logging Area near Kuranda, 16°46'S,145°37'E, Jan 1979, *Gray* 1256 (BRI); Bridle Creek about 12 miles [19.2 km] SE of Mareeba, Nov 1973, *Hartley* 14123 & *Hyland* (BRI, CANB); Russell River, in 1892, *Johnson* s.n. (MEL); Bellenden Ker Range, Oct 1977, *Jago* 19 (QRS); Mt Bartle Frere, in 1882, *Johnson* [MEL1538185] (MEL); ditto, Oct 1935, *Blake* 9803 (BRI); State Forest Reserve 194, East Barron, 17°21'S,143°27"E, Nov 1981, *Gray* 2241 (BRI); Fenby's Gap, 17°52'S,146°05'E, Oct 1951, *Smith* 4901 (BRI). NORTH KENNEDY DISTRICT: Murray River, Oct 1867, *Dallachy* [MEL1538502] (MEL); Murray Upper, 18°05'S,145°42'E, Feb 1991, *Cooke* 464 (BRI); Wigham Creek Crossing, 37 km NW of Ingham on road to Broadwater Creek State Forest Park, 18°27'S,145°59'E, Nov 1992, *Halford* 689 (BRI); Family Islands, Sep 1864, *Dallachy* [MEL1538260] (MEL); Edmund Kennedy National Park near Cardwell, 18°13'S,146°06'E, Dec 1991, *Bean* 3869 (BRI); approx. 6.5 km NNW of Cardwell, Oct 1978, *Thorsborne & Thorsborne* 300 (BRI); Mt Fox, Apr 1949, *Clemens* s.n. (BRI); ditto, Dec 1949, *Clemens* s.n. (BRI).

Distribution and habitat: North-eastern Queensland, from the Daintree River to near Cardwell; usually along creeks, near swampy lowland forests, on banks of brackish lagoons, beach ridges and coastal sands; in vine thickets on sandy soil (Map 3).

Affinities: *Cyclophyllum multiflorum* is readily distinguishable by its 5–9-flowered, sessile cymes, usually hairy branchlets and pedicels, usually densely lenticellate branchlets, prominently foveolate leaf blades with arcuate lateral nerves and greenish-yellow or olive coloured discoloration of the abaxial surfaces of dried leaf blades. It resembles *C. schultzii* in



Fig. 5. ***Cyclophyllum multiflorum***. A. flowering branch × 0.8. B. detail of inflorescence × 0.8. C. flower × 5. D. LS. of flower × 5. E. detail of anthers and stigma (viewed from above) × 10. F. fruit × 3. G. pyrene × 3. A–E, *Bean* 3869 (BRI); F & G, *Sankowsky* 684 (BRI). Del. W. Smith.

its many-flowered inflorescences, but that differs from this species by its distinct, single or occasionally branched pedunculate inflorescences, its flowers with shorter corollas with tubes less than twice as long as the lobes, and its usually subcordiform fruits which are usually deeply and widely 2-lobed apically. In addition, *C. multiflorum* resembles *Canthium longiflorum* (Valeton) Merr. & L.M.Perry from New Guinea, a species also belonging in *Cyclophyllum*, in its sessile, many-flowered inflorescences, but that species differs from the former in its longer and larger leaf blades, and longer pedicels.

Variability: The shape, size and texture of leaf blades and the presence or absence of hairs on branchlets and inflorescence axes are very variable in this species. The majority of specimens examined have hairy branchlets and peduncles whereas two collections (*Jago* 19 and *Gray* 2241 above) differ in having these parts glabrous. Specimens from near Cardwell, the Atherton Tableland and the Daintree River, with elliptic, sublanceolate or elliptic-oblong, thick leaf blades with a subacute or acuminate apex are typical of this species. Collections from near the Russell River, Mt Bartle Frere and Mt Bellenden Ker usually have comparatively smaller, thinner leaf blades with subacute, ± obtuse or shortly acuminate apex. They probably represent a distinct form of this species, but more specimens especially ones in flower are necessary to be certain of this.

Etymology: The specific epithet, from Latin *multiflorus*, abounding in flowers, refers to the many-flowered inflorescences in this species.

8. Cyclophyllum schultzii (O.Schwarz)S.T.Reynolds & R J.F.Hend. **comb. nov.**; *Plectronia schultzii* O.Schwarz, Feddes Repert. 24: 101 (1927); **Type**: [Northern Territory.] Port Darwin, 16 miles E [of], banks of Howard Creek, *Bleeser* 81 (?B†, n.v.). *Canthium schultzii* (O.Schwarz) Chippendale, Proc. Linn. Soc. NSW 96(4): 208 (1972).

Shrubs or trees 1.5–10 m high; bark mottled with grey or brownish-grey colouration, smooth or finely fissured; branchlets very pale to dark brown, glabrous, usually dotted with minute pale brown lenticels. **Leaves** with stipules triangular, keeled, attenuated into a long or short, narrow folded apex; petioles 5–15 mm long; blades broadly or narrowly elliptic, elliptic-ovate, elliptic-oblong to ± oblanceolate, 8.5–14(–16.2) × 1.8–7.2(–8.2) cm, with apex abruptly and shortly, bluntly acuminate, subacute or obtuse, and base abruptly obtuse or subacute, and usually attenuate into the petiole, thin or thick, coriaceous, glabrous, with adaxial surfaces glossy or dull green and drying brownish or blackish coloured and sometimes with white blotches, and abaxial surfaces pale green or slightly glaucous and drying pale brown to pale greyish brown, sometimes with midrib and nerves darker coloured; lateral nerves in (4–)6–11 pairs, obliquely arched or arcuate and looping near margins, prominent; secondary venation very openly reticulate; margins flat or sometimes slightly recurved; domatia usually present but usually inconspicuous. **Cymes** 2–11(–16) flowered, with a simple or once-branched glabrous peduncle 1–5 mm long; branches, where present, each terminated by a cymule of 4–8 flowers; bracts minute, glabrous. **Flowers** in bud obtuse at apex; pedicels (1.5–)3–5 mm long; calyx c.2 × 2 mm, cupuliform with a very short limb and minute ovate lobes, glabrous or with a few hairs on the lobes; corolla white, becoming yellowish with age, 6–9 mm long, with tube 3–5 mm long, 2–2.5 mm wide at mouth, densely hairy adaxially, the hairs at the mouth much denser and longer; lobes elliptic, 2.5–5.5 × 1.5–2 mm, obtuse, slightly recurved and cucullate at apex, glabrous or sparsely hairy towards the base adaxially, sparsely papillose abaxially; disc shorter than calyx limb, fleshy, glabrous; stamens erect, with filaments broad, c.0.5 mm long, and anthers ovoid, apiculate, 2–2.5 mm long; style with stigma 6–7 mm long, slightly protruding from mouth of corolla tube but shorter than anthers; stigma broad, ± orbicular but 2-lobed. **Fruits** on erect to ascending pedicels 5–7 mm long, pale reddish pink when ripe, fleshy, transversely ellipsoid or obcordate, depressed and lobed at apex, 8–12 × 16–23 mm, or fruits occasionally 1-lobed when slighty ellipsoid or obliquely obovoid, 8–10 × 5–8 mm; pyrenes rugose.

Affinities: *Cyclophyllum schultzii* is readily distinguishable by its usually 6–11-flowered, pedunculate inflorescences, short corollas with

dense hairs at the mouth of the corolla tube, and broadly obcordiform (sometimes ellipsoidal) fruits. This species is closely related to *C. brevipes* (Merr. & L.M.Perry) S.T.Reynolds & R.J.F.Hend. in its more or less similar leaves, flowers and fruits, but that species differs from *C. schultzii* in its sessile inflorescences with fewer flowers, and corollas which are glabrous at the mouth of the tube. (See under *C. brevipes* below.)

Variability: Attributes of the leaves of this species are very variable. Though two forms are recognised here based on these attributes, specimens are sometimes difficult to place in either taxon as they appear intermediate between these forms. Never-the-less, the extremes of these taxa are very distinctive.

Key to forms of *Cyclophyllum schultzii*

1. Leaf blades elliptic or elliptic-ovate, (4.2–)6–7.2(–8.2 cm) wide, less than twice as long as broad, usually obtuse at apex and base, thick, coriaceous, on petioles 7–15 mm long; lateral nerves in 6–11 pairs .... **8a. *C. schultzii*** forma ***schultzii***

   Leaf blades narrowly elliptic or lanceolate, 1.8–3.3(–3.9) cm wide, 3 to 4 times as long as broad, usually subacute at both apex and base, thin, coriaceous, on petioles 5–6 mm long; lateral nerves in 4–7 pairs .... **8b. *C. schultzii*** forma ***angustifolium***

8a. C. schultzii forma schultzii

Leaf blades broadly elliptic or elliptic-oblong, thick, coriaceous, green on adaxial surface, pale green abaxially, usually drying brownish coloured with nerves paler coloured.

Selected specimens: **Northern Territory**. Melville Island, Garden Point, 11°24'S,130°25'E, Nov 1986, *Dunlop* 6845 (DNA); ditto, Apr 1987, *Russell-Smith* 2134 & *Lucas* (DNA); Leader Creek, Gunn Point, 12°12'S,130°06'E, Mar 1983, *Wightman* 225 (DNA); Black Jungle, 12°32'S,131°13'E, Oct 1985, *Clark* 27 & *Wightman* (BRI, CANB, DNA); Darwin River Quarry area, 12°49'S,130°59'E, Nov 1978, *Rankin* 1602 (DNA); Channel Point, 13°08'S,130°15'E, Nov 1985, *Clark* 76 (BRI, CANB, DNA); ditto, Jan 1986, *Wightman* 2509 (DNA); Howard River headwaters, 12°32'S,131°07'E, Feb 1990, *Taylor* 10 (DNA); Howard Springs Creek, 12°27'S,131°04'E, Oct 1974, *Dunlop* 3686 (BRI); Adelaide River, 13°14'S,131°05'E, Dec 1971, *McKean* 178 (CANB, DNA); Catchment of Habgood River, Gapuwiyak, 12°39'S,135°52'E, Dec 1987, *Russell-Smith* 4362 & *Lucas* (BRI); Warangaya, Elcho Island, 11°56'S,135°42'E, Sep 1987, *Russell-Smith* 3299 & *Lucas* (BRI).

Distribution and habitat: Arnhem Land, Northern Territory, and offshore islands; chiefly in coastal areas, at the edge of wet monsoon forest. (Map 3).

Variability: The leaf blades in this form are quite variable. Collections from near Howard River, Howard Springs Creek (type locality), Darwin River, Meckitt Creek, Black Jungle and Channel Point have comparatively large, broadly elliptic to elliptic-ovate leaf blades which are usually abruptly obtuse at apex and base, or are abruptly shortly and bluntly acuminate at the apex, whereas specimens from other areas usually have smaller or narrower leaves. Some of those from near Adelaide River have comparatively narrow leaves and are not too different in appearance from some of the specimens included under *C. schultzii* forma *angustifolium* here. However, the leaves in that form are usually much narrower and usually thinner in texture than those included here under *C. schultzii* forma *schultzii*. A few collections from north-eastern Arnhem Land resemble ones from far northern Queensland included under *C. brevipes* here in their thin, usually elliptic or elliptic-oblong leaf blades which possess prominent reddish coloured dots and flecks. However, in that species the inflorescences are sessile, have unbranched peduncles and fewer flowers, and the leaves are comparatively shortly petiolate (see also under *C. brevipes*).

These latter specimens of *C. schultzii* forma *schultzii* probably have only young leaves on them but study of more specimens would be necessary to establish if this is true.

8b. C. schultzii forma **angustifolium** S.T.Reynolds & R.J.F.Hend. **forma nova** a *C. schultzii* forma *schultzii* foliis lamina angustiora, textura plusminusve membranaceiore, nervis lateralibus paucioribus praeditis differt. **Typus**: Northern Territory. Deaf Adder Creek Gorge, 18 November 1972, *P. Martensz* AE324 (holo: BRI; iso: CANB, DNA).

Leaf blades narrowly elliptic, thin, coriaceous, reportedly discolorous and ± glaucous on their abaxial surface when fresh, usually drying blackish coloured or brown, with 4–7 pairs of slender and usually obliquely arched lateral nerves. (Fig. 6).

Selected specimens: **Northern Territory**. Finniss River, Jan 1973, *Byrnes* 2398 (BRI); approximately 19 miles [c.30.4 km] NNW of Oenpelli Mission, 12°04'S,133°—'E, Feb 1973, *Lazarides* 7708 (BRI, CANB, DNA); Cooper Creek, first billabong below Nabarlek Camp, 12°20'S,133°20'E, Sep 1978, *Rice* 2990 (CANB); Upper East Alligator River, 12°49'S,133°22'E, Oct 1987, *Russell-Smith* 3869 & *Lucas* (DNA); Waterfall Creek, UDP Falls area, 13° 26'S,132°25'E, Jul 1978, *Rankin* 1467 (DNA, PERTH); Edith Falls Reserve, 14°12'S,132°11'E, Oct 1977, *Must* 1658 (DNA); Katherine River, Katherine, Oct 1958, *Chippendale* 5042 (BRI, DNA, PERTH); ditto, Dec 1963, *Adams* 802 & 803 (BRI, CANB); Katherine Gorge National Park, Oct 1968, *Byrnes* 536 (BRI, DNA, PERTH).

Distribution and habitat: Arnhem Land, Northern Territory; usually along rivers, creeks and lagoons, or on sandstone slopes above river; in monsoon forests, usually on sandy soil (Map 5).

Notes: *Cyclophyllum schultzii* forma *angustifolium* is characterised by its comparatively thin, narrowly elliptic or lanceolate, thin leaf blades with 4–7 pairs of slender, suboblique looping lateral nerves.

Although O. Schwarz (1927, p.101), when describing *Cyclophyllum schultzii* (as *Plectronia schultzii*), made note of a narrow-leaved form of this species and cited collections as representing such, namely Adelaide River, *Schultz* 440, 447, 503, and Finniso River District, *Bleeser* A7, he did not formally name this form. Only duplicates of Schultz's collections from Adelaide River have been available for this study. They (*Schultz* 440 [MEL1538523], 447 [MEL1538524] and 503 [MEL1538493](all MEL)) all fall within the range of variability here accepted for *C. schultzii* forma *schultzii*. On the other hand, *Bleeser* A7 from the 'Finniso' [Finniss] River District is/was (?) probably the only part of Schwarz's material referrable to *C. schultzii* forma *angustifolium* for specimens of this form have since been collected (in 1973) in the Finniss River area by Norm Byrnes (see *Byrnes* 2398 in the list of specimens above).

Etymology: The epithet, from Latin *angustus*, narrow, and *folium,* leaf, refers to the narrow leaf blades in this taxon.

9. Cyclophyllum brevipes (Merr. & L.M.Perry) S.T.Reynolds & R.J.F.Hend. **comb. nov.**; *Canthium brevipes* Merr. & L.M.Perry, J. Arn. Arb. 26: 231-232 (1945). **Type:** Papua New Guinea. Western Division: Penzara, between Morehead and Wassi Kussa Rivers, December 1936, *L.J. Brass* 8443 (iso: BRI).

Shrubs or small trees 2–6 m high, usually with spreading branches; bark mottled grey; branchlets slightly quadrangular distally, grey or reddish brown, glabrous, usually dotted with white lenticels. **Leaves** with stipules ovate, keeled, attenuated into a usually short folded apex, glabrous; petioles 3–9 mm long; blades elliptic, (6.2–)10–13.5 (–14.7) × (2.5–)3.7–5(–5.5) cm, with apex shortly acuminate or subcaudate, and base subobtuse, abruptly obtuse or ± rounded, thin (more so when dry), coriaceous, glabrous, drying blackish coloured or brown, sometimes blotched and marked with reddish coloured resin dots, deeply channelled over midrib proximally on the adaxial surface; lateral nerves very slender, obliquely arched, ± obscure adaxially; secondary venation reticulate, obscure; domatia usually present, usually small and inconspicuous. **Cymes** (4–) 6–8(–10)-flowered, sessile; bracts glabrous. **Flowers** in bud obtuse at apex, perfumed; pedicels 2–3 mm long; calyx c.2 ×.2.5 mm, glabrous; limb short, denticulate with lobes ovate, minute, glabrous or with scattered hairs distally; corolla white or yellow, 5.5–7.5 mm long,

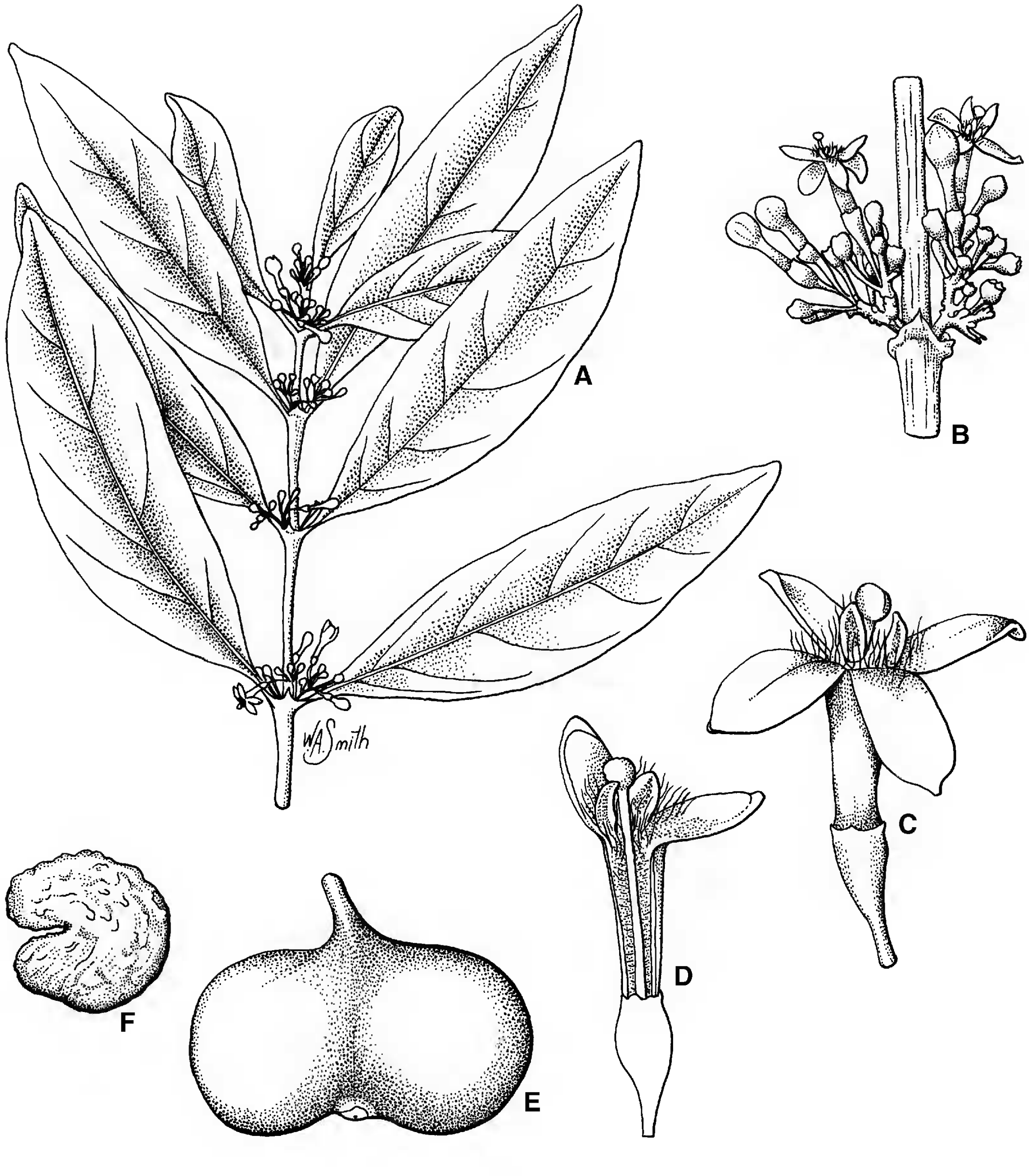
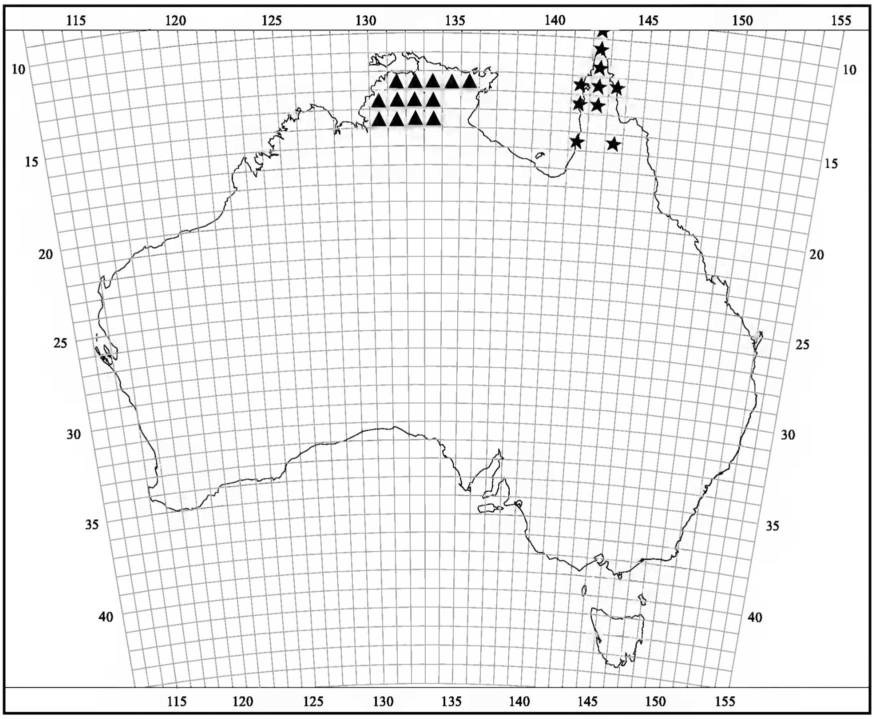


Fig. 6. ***Cyclophyllum schultzii*** forma ***angustifolium***. A. flowering branch × 0.8. B. pedunculate inflorescence with branches × 2. C. flower × 5. D. LS of flower × 5. E. fruit × 3. F. pyrene × 3. A–D, *Adams* 803 (BRI); E & F, *Byrnes* 1187 (DNA). Del. W. Smith.



Map 5. Distribution of *Cyclophyllum brevipes* ★ and *Cyclophyllum schultzii* forma *angustifolium* ▲.

with tube (2.5–)3.5–4.5 × c.1.5 mm, sparsely hairy adaxially but with hairs more dense at mouth; lobes subelliptic, 3–4 × 1–1.5 mm, obtuse or subacute and ± cucullate at apex, glabrous, densely papillate at apex and on margins; disc fleshy, as long as the calyx limb; stamens with filaments c.0.5 mm long and anthers 1.5–1.75 mm long; style with stigma 7–7.5 mm long; stigma c.1 mm long. **Fruits** on ascending to spreading pedicels 2.5–6.5 mm long, bright red when ripe, broadly ellipsoid to obcordate, slightly retuse or deeply and widely 2-lobed on top, 8–10 × 10–18 mm; pyrenes with slightly granular surface when dry.

Selected specimens: **Papua New Guinea**. Lake Daviumbu, Middle Fly River, Aug 1936, *Brass* 7470 (BRI); Western District, Weam, Bensbach subdistrict, 8°38'S,141°07'E, Jul 1967, *Ridsdale* [NGF33541] (BRI, NSW); Pangoa Airstrip, Lake Murray, Morehead subdistrict, 8°05'S,141°15'E, Mar 1968, *Millar* [NGF35421] (BRI). **Queensland.** Cook District: Cape York, 11°—'S,141°—'E, Nov 1955, *White* 1157 (BRI); Bamaga, 11°1-'S, 142°3-'E, Oct 1965, *Smith* 12381 (BRI); ditto, Oct 1965, *Jones* 3826 (CANB); Cockatoo Creek, at Telegraph Crossing Road, 11°39'S,142°27'E, Mar 1992, *Johnson* 5098 (BRI); Vyse Crossing, 19 km N of Lorim Point, Weipa, 12°30'S,141°53'E, Jan 1981, *Morton* AM1030 (BRI, MEL); Rocky Creek, 12°06'S,142°33'E, Jul 1984, *Puttock & King* [UNSW16940] (BRI, UNSW); Wenlock River, southern bank at Moreton Telegraph Station, 12°27'S,142°38'E, Oct 1989, *Neldner* 2804 & *Clarkson* (BRI); Wabum Creek, about 18 km from Aurukun on road to Merluna, 13°16'S,141°50'E, Dec 1981, *Clarkson* 4131A (BRI, QRS); Coconut Creek, downstream from Beagle North Camp, about 40 km SSW of Weipa, 13°01'S,141°47'E, Dec 1981, *Clarkson* 4163 (BRI); Lakefield National Park, Pocket Waterhole, "Bizant", 14°4-'S,144°0-'E, Oct 1985, *Williams* 85264 (BRI); Hann River, 15°12'S,143°52'E, Nov 1971, *Stocker* 842 (BRI); Magnificent Creek, Kowanyama, 15°2-'S,141°4-'E, Mar 1990, *Birchley* 4 (BRI).

Distribution and habitat: Southern Papua New Guinea to Cape York Peninsula, Australia; usually in riparian rainforests on sandy soil. (Map 5).

Affinities: *Cyclophyllum brevipes* is characterised by its shortly petiolate elliptic leaves which usually dry blackish coloured or dark brown, its 4–10-flowered sessile cymes, and its obcordate or ellipsoid fruits. It is closely related to *C. schultzii* with which it shares more or less similar leaves, inflorescences, flowers and fruits, but that species differs from *C. brevipes* mainly by its pedunculate inflorescences.

These two species may be distinguished using the following key.

1. Inflorescences pedunculate, with (2–)4–11(–16) flowers; peduncle sometimes branched; corolla tube 3–5 mm long, 2–2.5 mm wide at mouth where very densely hairy; fruit usually obcordiform, deeply 2-lobed at apex, 8–12 × 16–23 mm; petiole 5–15 mm long .... **C. schultzii**

   Inflorescences sessile, (4–)7–10-flowered; corolla tube 2.5–4.5 mm long, to 1.5 mm wide at mouth where sparsely hairy; fruit ellipsoid or obcordiform, retuse or deeply 2-lobed at apex, 8–10 × 10–18mm; petiole 3–9 mm long .... **C. brevipes**

Notes: The Queensland specimens match closely those from Papua New Guinea especially the isotype of *C. brevipes* at BRI, and the one collected by Len Brass from Lake Daviumbu on the Middle Fly River, also at BRI. Queensland plants are recorded as growing in habitats similar to those for plants in Papua New Guinea.

The fruits of this species are reported as edible [for humans].

Variability: This species varies greatly in the shape and size of its leaves and fruits, both in Australia and in Papua New Guinea. Specimens with shortly petiolate, blackish brown or brown, elliptic leaf blades, obcordiform fruits and glabrous flowers are typical of this species. However, specimens with narrowly elliptic leaf blades which dry pale brown and have typical obcordiform fruits, or ones with typical elliptic leaf blades but with small obovoid fruits, are also present. These probably represent distinct forms of the species, but more specimens for study would be necessary to be certain if this is correct. Moreover, a few specimens, e.g. *Jones* 3826 and *Johnson* 5098 cited above, resemble specimens from eastern Arnhem Land included here in *C. schultzii* in their thin, elliptic leaf blades which are prominently marked with numerous, small, reddish coloured dots or flecks but that species differs from *C. brevipes* by its pedunculate inflorescences which have a greater number of flowers in each.

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